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Monandrian Plants

OF THE ORDER

SCITAMINEÆ,

CHIEFLY DRAWN FROM LIVING SPECIMENS

IN THE BOTANIC GARDEN AT LIVERPOOL.

Arranged according to the System of Linnæus.

WITH DESCRIPTIONS AND OBSERVATIONS,

BY

WILLIAM ROSCOE, ESQ.[R]

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. ——So from the root
Springs lighter the green stem, from thence the leaves
More airy; next the bright consummate flower
Spirits odórous breathes. Flowers and their fruits
Man's nourishment, by gradual scale sublim'd
To vital spirits aspire____to animal____
To intellectual____

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GOD OF THE CHANGEFUL YEAR!—AMIDST THE GLOW

OF STRENGTH AND BEAUTY AND TRANSCENDANT GRACE,

WHICH ON THE MOUNTAIN HEIGHTS, OR DEEP BELOW

IN SHELTER'D VALES, AND EACH SEQUESTER'D PLACE,

THY FORMS OF VEGETABLE LIFE ASSUME;

—WHETHER THY PINES, WITH GIANT ARMS DISPLAYED,

BRAVE THE COLD NORTH, OR WRAPT IN EASTERN GLOOM,

THY TRACKLESS FORESTS SWEEP, A WORLD OF SHADE;—

—OR WHETHER SCENTING OCEAN'S HEAVING BREAST,

THY ODORIFEROUS ISLES INNUMEROUS RISE,

OR UNDER VARIOUS LIGHTER FORMS IMPREST,

OF FRUITS AND FLOWERS, THY WORKS DELIGHT OUR EYES;—

GOD OF ALL LIFE! WHATE'ER THOSE FORMS MAY BE,

O MAY THEY ALL UNITE IN PRAISING THEE!

INTRODUCTION.

Since the publication of the new arrangement of Scitaminean Plants in the eighth volume of the Transactions of the Linnæan Society, many valuable works on that subject have been given to the public, by which the knowledge of this interesting tribe has been greatly extended, some new genera have been established, and considerable additions made to the species. Among these publications are the last edition of the *Hortus Kewensis;* the *Prodromus Floræ Novæ Hollandiæ* by the learned circumnavigator, Mr. Robert Brown; the *Description of several of the Monandrous Plants of India,* by the late Dr. Roxburgh, in the eleventh volume of the *Asiatic Researches,* since considerably extended in his *Flora Indica,* now publishing by Dr. Carey of Serampore, and Dr. Wallich of the Botanic Garden Calcutta; and the dissertations of the late lamented Sir James Edward Smith, P.L.S. in the *New Cyclopædia* of Dr. Rees. To these may be added the different periodical works which have since appeared in this and foreign countries; by which great light has been thrown on both the generic and specific distinctions of this tribe, and materials provided for supplying their defects and reducing them into more perfect order.

In the *Genera Plantarum* of Linnæus, edited by Reichard, the Scitaminean Plants consist of eight genera only, viz.—1 *Canna,* 2 *Amomum,* 3 *Costus,* 4 *Alpinia,* 5 *Maranta,* 6 *Curcuma,* 7 *Kæmpferia,* and 8 *Thalia,* all of which are now fully established and recognized.

Jussieu *(Gen. Pl. Ed. Uster. Turici, Helvet.* 1791) added to these four other genera, viz. 1 *Catimbium,* 2 *Globba,* 3 *Myrosma, (ex Lin. Supp.)* 4 *Hedychium;* of these *Catimbium* is the fine plant formerly called *Renealmia Nutans,* since ascertained to be an *Alpinia—Myrosma,* so long considered as a well-established genus, but shown in the present work to be a species of *Phrynium. Hedychium* and *Globba,* also retained in our present arrangement, although the name of *Globba* is perhaps applied to a different genus from that intended by Jussieu.

To the foregoing genera, Gmelin in his *Systema Naturæ,* Leipsic 1791, added four others, viz.—1 *Renealmia,* 2 *Philydrum,* 3 *Sphærocarpus,* and 4 *Tsiana;* of these the first is founded on a different plant from that before noticed, and will be found inserted in the present work; the second is justly considered by Mr. Brown as belonging to a different class, and is therefore omitted in the present arrangement; the third *(Sphærocarpus)* is the *Hura Siamensium* of Kœnig *(Retz. Ob. Bot. fas.* iii. p. 49) which has since been described under the name of *Globba Hura* by Dr. Roxburgh, *Asiat. Res.* xi. 359, and under that of *Globba Versicolor* by Sir J. E. Smith in *Exot. Bot.* vol. 2, tab. 117, and the fourth *(Tsiana Speciosa)* is the *Costus Speciosus* of Linnæus.

In the edition of the *Sp. Plantarum* by Willdenow *(Berol.* 1797) we find three additions made to the genera of *Scitamineæ* before established, viz. 1 *Hellenia,* 2 *Hornstedtia,* 3 *Phrynium;* of these the genus *Hellenia,* according to Willdenow, comprehends four species, all of which are founded on the descriptions of Retzius from the discoveries of Kœnig; the first, denominated by Retzius *Heritieria Allughas,* was included in my former arrangement, under the name of *Alpinia Allughas,* and is cited as such by Dr. Roxburgh, *Asiat. Res.* xi. 353, who has confirmed the doubtful reference there made to Van Rheede, *Hort. Mal.* xi. 14, under which name a figure of it will be found in the present work. The three other species *Hellenia Alba (Languas vulgare of Kœnig, Retz. Mon.* 64. *Heritieria Alba* of Retzius, *Obs.* vi. 18,)

Hellenia Chinensis (Languas Chinensis Kœnig, Retz. Monan. 65; Heritieria Chinensis, Retz. Obs. vi. 18) and *Hellenia Aquatica* (Languas Aquatica Kœnig, Retz. Mon. 67. Id. Obs. Bot. vi. 18) are the *Alpinia Alba, A. Chinensis and A. Aquatica* of my former arrangement, of which no further account has yet been obtained.

It appears then that the genus *Hellenia* of Willdenow (the *Languas and Heritiera* of Kœnig and Retzius) is absorbed in that of *Alpinia;* but a distinctive character has since been observed by Mr. Brown, which he conceives to be sufficient to separate some of the plants of which it is composed from *Alpinia,* and to establish them as a distinct genus. This character depends chiefly on the filament being extended somewhat beyond the anther, whilst in the genus *Alpinia,* the anther is always terminal (Brown *Prod. Pl. Nov. Holl.* vol. 1, p. 307.) The suggestion of Mr. Brown has been adopted by Sir J. E. Smith under the article *Hellenia* in Rees's New Cyclopædia, where the grounds of this alteration are fully given. Only two species are there included, viz. the *H. Allughas* of Retzius, figured also by Edwards, and the *H. Cerulea* of Brown, *Prod.* 308, of which I conceive the latter only to be an *Hellenia;* a doubt is expressed by Mr. Brown whether the *Alpinia Alba, A. Chinensis* and *A. Aquatica* of Retzius and Willdenow may not also be referred to this genus.

The *Hornstedtia* of Willdenow is a genus founded upon two plants described by Retzius *(Obs. Mon.* 68, 69) under the names of *Amomum Scyphyferum* and *A. Leonurus.* Of these plants Retzius observes he has found no figures in Rumphius, Van Rheede, or Plukenet, but from his descriptions it appears that the inflorescence is *radical in an imbricated spike,* and that in both of them the anther is crowned by a membranous projection, viz. 1, *Apice Membrana rotundata colorata, nuda, coronata.* 2, *Anthera, ad apicem, Membrana bifida, erecta coronata.* This agrees so nearly with the character of Amomum, which has the filament with a lobed crest above the anther, that Gmelin has referred them to that genus; where they may be allowed to remain; at least until we can obtain a sight of the living plants.

In the *Syst. Veg.* of Roemer and Schultz (Stutgard 1817) three new genera of Scitaminean Plants are introduced, viz. 1 *Peronia,* 2 *Ceratanthera,* and 3 *Roscoea,* the first of these is the *Thalia Dealbata,* the second *Globba Marantina,* both of which are figured in the present work, and the third is the genus named by Sir James Edward Smith in his *Exotic Botany* published in 1805, in honour of the Author of the present work.

The genus Renealmia as inserted in the edition of the system of Linnæus by Willdenow was first proposed by Linnæus, but the plant was afterwards considered as an Alpinia, as before stated, and given under the name of *Alpinia Exaltata* in *Rees's Cyclopædia,* and other works. Further inquiry and repeated examinations of the actual specimens have however shown not only that the idea of Linnæus was correct, but that the genus *Renealmia* includes also several other plants of great importance, as well in the eastern as western hemisphere, amongst which is probably the celebrated *Cardamom* plant, the *Eletari* of the *Hort. Malabar.* which Dr. Maton had already in his observations in *Trans. Lin. Soc.* vol. x. p. 250, demonstrated could not be an Alpinia, and had proposed to establish as a new genus by the name of *Elettaria,* a name which has been adopted by several Botanists, and particularly by Roemer and Schultz in their edition of the Systema Naturæ of Linnæus. But the name of *Elettaria* being of Indian origin, and characterising only the individual plant, I had intended to propose to exchange it for that of *Matonia,* in honour of my highly respected friend Dr. Maton, one of the Vice Presidents of the Linnæan Society; but more recent discoveries having shown me that this plant, as well as several others of great beauty and importance in both the East and West Indies are species of RENEALMIA, I find myself compelled to arrange it under that name, and consequently that it cannot be considered as constituting a new genus.

Several singular plants found on the Continent of America and in the West Indian Islands belonging to the section of Cannæ, which had been discovered and figured by Plumier, and some of which were

recognized and published a century afterwards by Jacquin in his *Fragmenta*, have long remained the *opprobrium botanicorum*, till Dr. Meyer perceiving that they formed a different genus from *Maranta* proposed, in his *Flora Essequibonensis*, to erect them into a new one by the name of *Calathea;* omitting to refer them to the genus *Phrynium* of Willdenow, to which they doubtless belong. This proposition has been adopted by Professor Sprengel in his Syst. Veg. *Gottingen*, 1825, and other writers. Circumstances have however occurred, which have brought several of these plants under my particular observation, and I am decidedly of opinion that, for reasons which will be fully detailed in the course of the present work, they are all properly included in the genus *Phrynium*, from which it is indeed impossible to separate them without altogether abolishing that genus.*

Thus it appears that the genera of *Catimbium*, *Myrosma*, *Philydrum*, *Sphærocarpus*, *Hornstedtia*, *Tsiana*, *Heretiera*, *Peronia*, *Ceratanthera*, and *Calathea*, proposed by different writers, are here either altogether omitted for want of sufficient information concerning them, or are included in other genera, whilst *Hellenia*, as now better defined and re-established by Mr. Brown, will separate a portion of the species from *Alpinia*, and form a distinct genus.

Scitamineæ, a term applied by Linnæus, in his natural orders, to a tribe of plants distinguished by their agreeable, useful, or valuable qualities, is derived from the Latin *Scitamentum*, any thing of a pleasant or savoury taste. It is the eighth order in his *Fragmenta*, and consists of various productions useful in food, medicine, &c. or remarkable for their odoriferous properties. It is a very distinct and natural order of plants, and can scarcely be separated under any system of arrangement, whether *natural* or *artificial*. The roots are in general either annual or biennial, and penetrate deeply into the ground. They are either fibrous or bulbous, and frequently both; and in the bulbs their valuable properties for the most part reside. The stem rises erect, and in general supports the peduncle, but in many cases the inflorescence is radical, or rising immediately from the roots. The petioles are sheathing; the leaves either promiscuous or bifarious; but are invariably lanceolate, admitting under that denomination of a great diversity of form. The calyx is superior, tubular, generally with a trifid margin. Corolla monopetalous, with a double limb or border; exterior limb in three sections—interior limb with a double lip; the upper one divided into two or three sections; the lower one large, entire or emarginate, usually called the nectary from its having been formerly supposed to perform that office, and being generally the most conspicuous and ornamental part of the plant. Anther either single or double—naked or with an appendage; style single, either at liberty or supported by the double anther, long, slender, flexible, but very tenacious, generally accompanied at the base by two glandular pointed processes. Stigma, infundibuliform, ciliate; seed vessel three-valved, three-celled, seeds arilled.

In a paper read before the Linnæan Society in 1806, and printed in 1807, in their transactions, (vol. viii. p. 330) I divided the tribe of Scitaminean Plants into two sections, the *Cannæ*, and the *Scitamineæ*

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* I cannot but regret that the learned Editor of the Botanical Register has adopted the opinion of Dr. Meyer, and considered *Calathea* as a distinct genus from *Phrynium;* in consequence of which he has in the 12th number of the Bot. Reg. p. 1200, given a list of 17 plants, which, as he says, "are probably referable to that genus;" several of which had previously been published by me (from an actual examination of the specimens of the plants themselves, either living or preserved) in the present work, as species of *Phrynium*. This seems the more extraordinary as he had in Bot. Reg. No. 141, p. 1020, published *November* 1, 1826, undertaken in a future number "to explain the generic differences which exist between the *South American Calatheas* and the *Asiatic Phryniums*." Yet in the 12th number of the new series above referred to, published 1*st November*, 1829, he observes that "he had not yet been fortunate enough to procure sufficient materials to explain the generic differences between *Calathea* and *Phrynium*; and is therefore still obliged to defer a complete character of *Calathea*." Some efforts afterwards made by the Editor, in the same article, to explain these differences, seem to me to have totally failed of success.

proper; the former having a single anther, and a style at liberty, and the latter a double anther, and a style supported between the lobes of the anther; a distinction which subsequent observations have confirmed, and which has also since been made by my learned friend Mr. Robt. Brown, in his *Prodromus Floræ Novæ Hollandiæ*, published in 1810; a circumstance which in justice to myself I have been here compelled to notice, as this distinction has been considered by many writers of the present day, as originating with Mr. Brown, and followed by me; to which I can only add, that if such is the fact, I was at the time when my dissertation was published, and am still, perfectly unconscious of it; otherwise I should have had great pleasure in attributing this discovery to its proper source.

The processes or pointed germinal appendages *(Corpuscula)* referred to in the plants of the true Scitaminean tribe, and which are found in all the genera, except *Costus*, which in consequence of this defect is supplied with another apparatus, probably for the same purpose, at the summit of the style, have given rise to various opinions as to their purposes and use. Kœnig, who seems to have been the first that observed them, considered them as *Nectaries*, but this opinion is erroneous, as the nectary of the plants bearing these processes is generally placed in the faux of the corolla. Other authors, and in particular Mr. Brown, have considered these processes as *sterile stamina*, but we can scarcely admit that a peculiarity which is found to extend through so large a tribe of plants should be an imperfection, nor can there be a doubt that they are perfect in their nature, and perform some important office in the economy of the plant, being deeply inserted in the germen and accompanying the style to the *ovarium;* so that they might rather be considered as imperfect styles, than as imperfect stamina. It is however, highly probable, that the function of these appendages is to facilitate the circulation of the impregnating fluid, conveyed through the fine capillary tube of the style to the interior of the germen, and that they contract or expand according to the degree of heat and moisture, or other circumstances; but on this subject further observation would be necessary before we positively decide. In a few instances, the place of these appendages, which are generally subulate, or in the form of hornlets, erect or diverging, acute or obtuse, is supplied by flat auriculated glands; as in some species of *Alpinia*, which may be taken as an additional proof that these parts are of some indispensable use in the economy of Scitaminean Plants.

Mr. Brown, after noticing in his above-mentioned work my arrangement of Monandrian Plants in the eighth volume of the Linnæan Transactions, has himself favoured us with some remarks on that subject, in which he has suggested other characteristics for separating the genera of *Scitamineæ* than those to which I had referred. In particular, he conceives the *inflorescence*, or mode of flowering, to be, in many instances, a good generic distinction, such as indeed may alone be considered as constituting a difference of genus, as sufficiently appears from what he observes of the *Cardamom* plant, the *Amomum Repens* of Sonnerat, where he says, "This plant appears, from Sonnerat's own specimens in the Banksian Herbarium, to be distinguished from *Alpinia only* by its inflorescence, for which cause, however, it was formerly separated, and not without reason, (nec immerito) by Adanson." On this I have only to observe, that although I was at one time disposed to regard the *inflorescence* as a good generic distinction; yet after the experience of many years, and particularly since I undertook the present work, I have been led to consider it as marking only a specific difference; instances having of late years occurred, both in *Zingiber* and *Costus*, and even in *Alpinia*, from which it appears that the individuals of these genera produce their flowers both terminally, from the extremity of the leaf-bearing stem, and radically or immediately from the root upon a proper *scape*, in addition to which I have seen in *Costus*, the same individual plant produce its flowers both terminally and radically, a circumstance which sufficiently shows that the inflorescence is not to be relied on for generic distinctions, which are only to be found in the immediate organs of fructification. The above-mentioned remarks of Mr. Brown have been translated into English by Mr. Lindley, the present Editor of the Bot. Reg. and inserted in the 144th number of

that work (v. p. 1037 reverse,) thereby, as we conceive, adopting his opinions, as to the characters to be resorted to in determining the genera of *Scitamineæ*. I am sensible that I may be charged with presumption in thus opposing my opinion to that of Botanists of the first rank of the present day; but having devoted a considerable time to the study of this particular tribe of plants, and having had an opportunity for nearly thirty years of examining the largest collection of them ever perhaps formed within the limits of Europe, I have ventured to lay before the public the result of my inquiries; without however presuming to compete with those distinguished individuals, who by the devotion of a greater portion of their lives to this study, and by their acknowledged talents have obtained a degree of knowledge on this subject commensurate with the magnitude of the science to which they have devoted themselves with such success.

I cannot dismiss the present publication, the impression of which has been limited to 150 copies, without expressing my obligations for many favours conferred on me in the course of my work. Of the pleasure I should have had in performing this duty, I have, however, in one instance been deprived by the lamented death of that great promoter of true Botanical Science, and my ever esteemed and highly respected friend Sir James Edward Smith, President of the Linnæan Society, with whom I have enjoyed many years of literary communion and unbroken friendship, the memory of which will never be effaced from my mind—an event which has occurred precisely at the period, when I should have had an opportunity of expressing in public my obligations to him, for his numerous and valuable suggestions to me in the course of my present undertaking, but which I am happy to reflect did not happen, till he had been enabled to terminate his great work of the English Flora, a work which has perfected the system of English Botany as far as present discoveries admit, and has, together with his other learned writings, conferred upon its Author a name and station which will remain pre-eminent as long as the science itself exists. For great assistance afforded me in the course of the present work, as well for specimens of various rare and curious plants, as for the information communicated to me in their highly valued and instructive correspondence, my grateful thanks are due to the Rev. Dr. Carey, of Serampore, and to Dr. N. Wallich, Superintendant of the Botanic Garden at Calcutta, joint Editors of the late Dr. Roxburgh's *Flora Indica*. I have also to acknowledge my numerous obligations to Charles Stuart Parker, Esq. of Liverpool, who in an excursion to several of the West India Islands, and to the Tropical portion of the Continent of America in the year 1825, obtained many rare and valuable plants, several of which had been found and figured upwards of a century ago by Plumier, and some of which have since been published by the elder Jacquin in his *Fragmenta*, but without having been referred by him to their proper genera. The state and condition in which Mr. Parker has preserved these plants have enabled me, by his assistance, and descriptions of them in a growing state, to give the accurate representation of them, which will be found in the following work. To the Right Honourable the Earl of Mountnorris, I am indebted for several drawings of coloured figures of Scitaminean Plants made from living specimens, some of which have not yet been introduced into this country, by native Artists at Lucnow, and obtained by his Lordship on his travels through India; for the use of which I have returned my more particular thanks to his Lordship in the course of my work. In like manner my acknowledgments are due to the Right Honourable Lord Stanley, now President of the Linnæan Society, whose collection of coloured drawings of exotic plants, both of the East and West Indies, contains several fine specimens of Scitamineæ, some of which, by his Lordship's obliging permission, are given in the ensuing work. My particular thanks are also due to Robert Barclay, Esq. of Bury Hill, to Wm. Jackson Hooker, L.L.D. F.R.S. &c. to Robert Graham, M.D. Professor of Botany, Edinburgh, to Robert Kaye Greville, L.L.D. F.R.S. &c. for many favours conferred upon me, which I have more fully acknowledged on various occasions. In addition to these my thanks are also due, for obligations of different kinds conferred on me in the course of my work, to the Rev. James Yates. M.A. of London, Richard Harrison, Esq. of Aigburgh,

Thomas Stewart Traill, M.D. of Liverpool, and Joseph Walker, Esq. of Allerton. For some beautiful specimens of drawings from living plants in the Botanic Garden at Liverpool, I am indebted to the accomplished pencil of Miss Rebecca Miller, who in this department of the art has not often been rivalled. And obligations of a similar kind have also been conferred upon me by my daughter-in-law Mrs. Edward Roscoe, and in various degrees by her sister Mrs. James Dixon, by Miss Ellen Yates, Miss Emily Fletcher and Miss Mary Waln. It is with great pleasure I avail myself also of the present occasion to return my acknowledgments to the Committee and Proprietors of the Botanic Garden at Liverpool, for the accommodation which I have received at all times from their Institution. Nor must I omit to return my sincere thanks to Mr. John Shepherd, now for nearly thirty years the assiduous and skilful curator of that garden, and to Mr. Henry Shepherd, F.L.S. for their continual assistance and unremitting attention to me in my labours, which have rendered them a pleasure to myself, and will, I hope, entitle them to the favourable estimation of my friends. Lastly, I have to notice Mr. Thomas Allport, a meritorious young Artist, who by his commendable diligence has obtained a considerable degree of excellence in Botanical delineations, and finished from the living plants a great portion of the drawings for the following work, all of which have been engraved and coloured under the care and direction of Mr. George Graves, Jun. of Peckham.

SYNOPTICAL TABLE OF GENERA.

MONANDRIA MONOGYNIA.

- anther single, style unsupported. — Sect. I. Cannæ.
  - style erect, club-shaped, stigma obtuse, seeds numerous, regular, globose — 1 Canna ..... *Linnæus*
  - style recurved, tubular
    - stigma triangular, seed single, irregular — 2 Maranta ... *Do.*
    - stigma orbicular
      - stigma simple, seeds three, oblong, angular — 3 Phrynium ... *Willdenow*
      - stigma terminating in a long flat appendage, seed single, regular — 4 Thalia ..... *Linnæus*
- anther double, style long, flexible, supported between the lobes of the anther. — Sect. II. Scitamineæ.
  - anther naked
    - filament long, grooved, anther attached to the apex — 5 Hedychium, *Kœnig*
    - anther attached by a short ligament to the faux of the corolla
      - anther incurved, two spurs at the base — 6 Roscoea ..... *Smith*
      - anther linear, without spurs ..... 7 Renealmia, *Linnæus*
  - anther covered at the back by the filament
    - filament not extended beyond the anther — 8 Alpinia ..... *Do.*
    - filament extended beyond the anther
      - apex of the filament ovate
        - style with germinal processes at the base — 9 Hellenia ... *R. Brown*
        - style naked at the base, two processes at the apex ..... 10 Costus ..... *Linnæus*
      - apex subulate, sulcate — 11 Zingiber .... *Roscoe*
      - apex bilobate — 12 Kæmpferia, *Linnæus*
      - apex trilobate ..... 13 Amomum ..... *Do.*
      - filament trilobate, middle section antheriferous, anther spurred ..... 14 Curcuma .... *Do.*
      - filament very long, grooved, anther with an appendage — 15 Globba ..... *Do.*

CHARACTERS OF THE GENERA.

Figures 6 and 7, *Roscoea* and *Renealmia.* The long lines which appear to connect the germen with the anther are intended to represent the style, which is received into the furrow of the double anther, and after conforming to its shape, appears again, with the stigma, a little beyond it. The small portion which appears below the anther is intended to show the ligament, by which the anther is attached to the faux or tube of the corolla; these two genera having no proper filament. In all the other genera the filament is shown connecting the anther with the germen.

Figure 11. *Zingiber.* I am well aware that Gærtner, in his Treatise "*De Fructibus et Seminibus Plantarum,*" printed at Stutgard in 1788, was the first who proposed to distinguish a genus of Plants by the name of *Zingiber*, but this genus was founded on a different principle from the above, being established upon the character of the seed, and not including either the officinal *Zingiber* or any of its proper congeners. The Plants which Gærtner has given as species of *Zingiber* are, for the most part, included under the genus *Amomum* in the present arrangement; on which account I cannot consider him as the founder of the present genus of *Zingiber.*

SYNOPTICAL TABLE OF SPECIES,

ACCORDING TO WHICH THE FIGURES AND DESCRIPTIONS OF PLANTS GIVEN IN THE FOLLOWING WORK ARE INTENDED TO BE ARRANGED.

SECTION I.—CANNÆ.

- **CANNA**
  - corolla monopetalous, with a double limb; inner limb bilabiate; upper lip tripartite
    - sections intire, lower lip intire
      - sections subequal, lanceolate, erect, leaves ovate-lanceolate — 1 INDICA — *Linnæus*
      - sections unequal, ovate — 2 LAMBERTI — *Lindley*
    - sections intire, lower lip emarginate
      - sections unequal
        - broad-ovate — 3 PATENS — *Aiton*
        - acute, diverging — 4 LATIFOLIA — *Hoy*
        - lanceolate, peduncles winged — 5 EDULIS — *Ker*
    - sections emarginate, lower lip emarginate
      - sections equal
        - ovate, undulate, crenate, flaccid — 6 FLACCIDA — *Dillenius*
        - ovate, erect, exterior limb erect — 7 GLAUCA — *Linnæus*
      - sections subequal
        - flowers in pairs, with long peduncles — 8 PEDUNCULATA — *Roscoe*
        - flowers crenate, bordered — 9 LIMBATA — *Do.*
        - sections obtuse, converging — 10 SYLVESTRIS — *Do.*
      - sections unequal
        - outer limb of corolla erect — 11 COCCINEA — *Aiton*
        - outer limb of corolla reflexed
          - flowers red — 12 ORIENTALIS — *Roscoe*
          - flowers yellow — 13 —— VAR. FLAVA — *Do.*
    - sections broad undulate, lobed, reflexed, tube campanulate, flowers pendulous — 14 IRIDIFLORA — *Ruiz & P.*
  - upper lip bipartite
    - lower lip intire
      - segments of the upper lip intire, stem smooth — 15 CARNEA — *Roscoe*
      - segments of the upper lip emarginate, stem pubescent — 16 LANUGINOSA — *Do.*
    - segments lanceolate
      - subequal, erect — 17 SPECIOSA — *Do.*
      - unequal
        - stem smooth — 18 LUTEA — *Aiton*
        - stem pubescent
          - leaves lanceolate — 19 PALLIDA — *Roscoe*
          - leaves broad-lanceolate — 20 —— VAR. — *Do.*
    - segments ovate
      - subequal, spike loose, flowers few — 21 AURANTIACA — *Do.*
      - unequal, spike compressed, flowers many — 22 COMPACTA — *Do.*
  - upper lip wanting, lower lip intire
    - leaves linear-lanceolate — 23 DENUDATA — *Do.*
    - leaves broad-lanceolate, acute — 24 —— VAR. — *Do.*

- **MARANTA**
  - stem herbaceous
    - branched
      - leaves ovate-lanceolate, acute, pubescent on both sides — 25 ARUNDINACEA — *Linnæus*
      - leaves linear-lanceolate, smooth on both sides — 26 INDICA — *Tussac*
    - divaricate, leaves ovate-lanceolate,
      - glaucous below — 27 DIVARICATA — *Roscoe*
      - purple below — 28 —— VAR. PURPLE — *Do.*
  - stem shrubby
    - smooth, leaves cordate-lanceolate, equilateral — 29 GIBBA — *Smith*
    - villous, leaves ovate-lanceolate, inequilateral — 30 TONCHAT — *Aublet*
  - stem erect, jointed, leaves ovate cuspidate, subequilateral, flowers in pairs, yellow — 31 CUSPIDATA — *Roscoe*
  - stem wanting, petioles radical, bearing the flowers, leaves broad-ovate, mucronate, coloured below — 32 BICOLOR — *Ker*

- **PHRYNIUM**
  - spike sessile
    - flowers large, segments of the outer limb involute, yellow — 33 GRANDIFLORUM — *Roscoe*
    - flowers small, segments of the outer limb reflexed, white — 34 PARVIFLORUM — *Roxburgh*
  - spike capitate, imbricated
    - globose
      - leaves equilateral, flowers yellow — 35 COMOSUM — *Roscoe*
      - leaves inequilateral, striped above, purple below, flowers purple — 36 ZEBRINUM — *Do.*
    - ovate
      - erect
        - outer bractes broad-ovate, flowers tubular, violet — 37 VIOLACEUM — *Do.*
        - outer bractes lozenge-shaped, flowers white — 38 ALLOUYA — *Do.*
      - drooping, outer bractes lozenge-shaped, flowers white — 39 MYROSMA — *Do.*
    - cylindrical, flowers tubular, yellow — 40 CYLINDRICUM — *Do.*
  - spike fasciculate, imbricate
    - hirsute, concave below, petioles hirsute, rufescent, flowers pale blue — 41 SETOSUM — *Do.*
    - pubescent, erect, petioles smooth, scape woolly, flowers tubular, yellow — 42 PARKERI — *Do.*
    - foliaceous, outer bractes broad ovate, brown, coriaceous, flowers tubular, yellow — 43 CASUPO — *Do.*
  - panicle glumaceous, leaves elliptical, oblique at the apex, flowers tubular, pale yellow — 44 ELLIPTICUM — *Do.*

- **THALIA**
  - stems fruticose, jointed; flowers axillary, in pairs, blue — 45 GENICULATA — *Linnæus*
  - stem radical, simple, cylindrical; spike compound, flowers dark purple — 46 DEALBATA — *Smith*

SECTION II.—SCITAMINEÆ.

- **HEDYCHIUM**
  - filament shorter than the lip
    - spike loosely imbricated
      - bractes tubular, villous, lip bilobate, lobes acuminate, filament recurved, — 47 ACUMINATUM ...*Roscoe*
      - bractes flat, lip bilobate, lobes ovate, filament erect — 48 SPICATUM.....*Wallich*
    - spike compactly imbricated, ovate
      - lobes of the bifid lip acute — 49 FLAVUM.....*Roxburgh*
      - lobes of the bifid lip obtuse — 50 FLAVESCENS.....*Carey*
      - lobes of the bifid lip elliptic
        - leaves lanceolate, narrow — 51 CORONARIUM .....*Linnæus*
        - leaves broad-lanceolate — 52 MAXIMUM.....*Roscoe*
  - filament twice the length of the lip
    - spike elongated, diffuse
      - bractes smooth, anther linear, leaves glaucous below — 53 GLAUCUM .....*Do.*
      - bractes villous, anther heart-shaped, leaves broad-lanceolate — 54 VILLOSUM . .....*Wallich*
    - spike compressed, dense, ovate
      - bractes ovate, acute, erect, lip notched, filament and anther scarlet... — 55 ELLIPTICUM .....*Smith*
      - bractes lanceolate, obtuse, lip two-lobed, filament white, anther ovate... — 56 THYRSIFORME ...*Do.*
    - spike cylindrical, whorls of three flowers, alternating into six upright rows
      - lobes of the lip elliptical, obtuse, bractes lanceolate, villous — 57 CARNEUM .....*Loddiges*
      - leaves lanceolate, narrow
        - bractes notched — 58 COCCINEUM .....*Smith*
        - bractes obtuse — 59 LONGIFOLIUM.....*Roscoe*
        - bractes acute
          - smooth, flowers red — 60 ANGUSTIFOLIUM *Roxburgh*
          - villous at point, flowers orange — 61 AURANTIACUM...*Roscoe*
      - lobes of the lip lanceolate, acute, leaves broad-lanceolate, mid-rib green — 62 GARDNERIANUM *Wallich*
      - lobes of the lip trapeziform, leaves broad-lanceolate, mid-rib red below — 63 ELATUM.....*Brown*

- **ROSCOEA**..... Leaves sheathing the stem and spatha; calyx tubular, membranous, intire; flowers large, pale-purple — 64 PURPUREA.....*Smith*

- **RENEALMIA**
  - leaves linear-lanceolate, spike long, erect; flowers red; segments of outer limb ovate, obtuse — 65 EXALTATA.....*Linnæus*
  - leaves broad-lanceolate; spike dense, fasciculated; flowers sessile, white, streaked, clouded with yellow — 66 FASCICULATA.....*Roscoe*

- **ALPINIA**.....
  - inflorescence simple
    - spike erect
      - lip bifid, sections notched, with fleshy protuberances at the base — 67 ALLUGHAS.....*Roscoe*
      - lip slightly bifid, with spurs at the base — 68 CALCARATA.....*Roxburgh*
      - lip trilobate
        - with flat hairy glands at the base — 69 MUTICA.....*Do.*
        - with spurs at the base, petioles bracteated — 70 BRACTEATA .....*Roscoe*
    - spike declined, filament cloven into two segments, lip panduriform — 71 DIFFISSA . ...*Do.*
    - spike pendulous
      - lip circular, crenate, streaked with concentric lines of crimson — 72 PENNICELLATA..*Do.*
      - lip broad-ovate, elongated at the apex, with spurs at the base — 73 NUTANS .....*Do.*
      - lip orbicular, with flat auriculated glands at the base — 74 AURICULATA.....*Do.*
  - inflorescence compound, on a common receptacle, flowers scarlet, bordered with white — 75 MAGNIFICA .....*Do.*

- **HELLENIA**... Spike loose, conical, declined; filament erect, red, with an ovate apex; capsule light blue — 76 CŒRULEA .....*Brown*

- **COSTUS**.....
  - spike compactly imbricated ..
    - flowers yellow
      - bractes ovate, red at the base, green at the summit — 77 SPICATUS .....*Linnæus*
      - bractes rhomboidal, intirely red — 78 CYLINDRICUS....*Roem.& S.*
    - flowers rose-colour, bractes ovate, scarlet — 79 SPIRALIS .....*Roscoe*
  - spike loosely imbricated, flowers white
    - bractes ovate, acute at the apex, red, leaves green on both sides — 80 NIPALENSIS .....*Do.*
    - bractes ovate, green at the apex, leaves green above, purple below — 81 DISCOLOR .....*Do.*
    - bractes ovate, intirely green, stems hairy, with red spots — 82 MACULATUS .....*Do.*

- **ZINGIBER** ....
  - spike radical
    - bractes ovate
      - obtuse
        - circular, green, margins membranous, yellow, lip ovate, slightly notched, dark purple — 83 OFFICINALE .....*Do.*
        - green, margins ciliated, downy, lip broad, crenate, notched, pale yellow — 84 ZERUMBET .....*Do.*
        - ferruginous, villous, margins membranous, lip deeply divided — 85 CASSUMUNAR ....*Roxburgh*
      - acute, apex green, cuspidate, villous, lip in three segments, bright yellow, outer limb red — 86 CHRYSANTHUM ...*Roscoe*
    - bractes lanceolate
      - crimson towards the apex, outer limb reflexed, crimson, lip ovate, crenate, pale yellow — 87 ROSEUM .....*Roxburgh*
      - bright red, slightly villous, outer limb erect, bright red, lip oblong-ovate, involute, yellow, spotted with red — 88 RUBENS ... .*Do.*
      - crimson at the apex, villous, outer limb reflexed, crenate, white, lip ovate, crenate, white — 89 SQUARROSUM..... *Do.*
  - spike terminal
    - erect, margins membranous, tinged with red, lip broad-ovate, slightly emarginate — 90 CAPITATUM .....*Do.*
    - diverging, lip oblong ovate, deeply notched at the apex — 91 ELATUM.....*Do.*

- **KÆMPFERIA**
  - leaves sessile...
    - broad ovate, bifarious, downy below
      - entirely green, lip white, purple at the base — 92 GALANGA.....*Linnæus*
      - margin purple, lip purple, two lobes of upper lip of corolla purple — 93 MARGINATA.....*Carey*
    - leaves lanceolate, smooth on both sides, lip purple, two lobes of upper lip of corolla white — 94 ANGUSTIFOLIA...*Jacquin*
  - leaves on long petioles .....
    - entirely green .....
      - lip broad-ovate, purple, bifid, segments mucronate — 95 OVALIFOLIA.....*Roxburgh*
      - lip ovate, light red, mucronate at the apex — 96 PANDURATA.....*Do.*
    - leaves broad-lanceolate, variegated above, purpurescent below, lip pale purple — 97 ROTUNDA.....*Linnæus*

SECTION II.—SCITAMINEÆ CONTINUED.

- **AMOMUM** ..... lip large, crenate, white, yellow at the base, crimson at the margin, germinal processes very long, capsule cylindrical, coriaceous, yellow, 98 MELEGUETA .....*Roscoe*
- **CURCUMA** ....
  - spike central, leaves entirely green, long petioled
    - leaves broad-lanceolate, lip two lobed, coma rose-colour ..... 99 AMADA .....*Roxburgh*
    - leaves cordate at the base, lip obscurely three-lobed, coma purple .....100 PETIOLATA .....*Do.*
  - spike lateral
    - leaves entirely green
      - leaves smooth on both sides, coma pale rose
        - outer limb of corolla crimson .....101 AMARISSIMA .....*Roscoe*
        - outer limb of corolla yellow .....102 LEUCORRHIZA .....*Roxburgh*
      - leaves pubescent beneath .....
        - broad-ovate, coma rose colour .....103 AROMATICA .....*Salisbury*
        - broad-lanceolate, coma purple .....104 ELATA .....*Roxburgh*
    - leaves purple-clouded
      - On upper mid-rib only.....
        - coma scanty, white, tipt with pink .....105 FERRUGINEA .....*Do.*
        - coma full, bright rose colour .....106 ÆRUGINOSA .....*Do.*
      - On under mid-rib only .....107 RUBESCENS .....*Do.*
      - On both upper and under mid-rib
        - leaves equilateral, lower surface downy .....108 LATIFOLIA .....*Roscoe*
        - leaves inequilateral, smooth on both sides .....109 ZEDOARIA.....*Roxburgh*
- **GLOBBA** .....
  - spike terminal
    - imbricated, stems villous, streaked with red, appendage to the anther ovate.....110 CAREYANA .....*Wallich*
    - fasciculated, stems smooth, green, appendage to the anther lunate .....111 MARANTINA .....*Wildenow*
  - spike lateral, leaves alternate, bifarious, lanceolate, with a withered twisted point, appendage to the anther reniform .....112 SALTATORIA .....*Roscoe*

Errata.

In the description of *Phrynium Parviflorum*, No. 34, line 2, it is said, "capsule three-celled," whilst at line 4 it is said, "capsule only one cell, fertile," which seems a contradiction; but by removing the comma, the meaning will appear, viz. that of the three-celled capsule only one cell is fertile.

In the description of *Hedychium Angustifolium*, lines 6 and 18, the reference to *Coromandel Plants*, No. 254 should be 251.

In the description of *Roscoea Purpurea*, No. 64, I have incautiously said, that "the anther is attached to the apex of the filament," but the fact is, that both in this genus and in *Renealmia*, the place of that organ (the filament) is supplied by a short flexible ligament, which merely serves to attach the anther to the faux of the corolla. I must therefore beg the Reader to understand, that this is the part to which I meant to refer, and that I consider these two genera (*Roscoea* and *Renealmia*) as having no proper filament.

SECTION I.

CANNÆ.

CANNA.

With this genus Linnæus has, with great propriety, commenced his vegetable system; because, as that system is chiefly founded on the number of the anther and style, this genus, in which only one of each of those parts is found, necessarily occupies the first station. Even this scanty apparatus is still further simplified by the anther having no proper filament, but being attached, as if by accident, to the margin of one of the petal-like segments of the corolla, which answers the double purpose of supporting the anther, and contributing to the beauty of the flower; but although, to an incurious observer, this appears to be its only support, yet, upon a nearer inspection, we find that the margin which bears the anther, is incrassated and strengthened by a concealed stamen, communicating with the tube of the corolla. The style is not less remarkable for its simplicity than the anther; being only a long, spatulate, or rather clavate process, not tubular, but of a solid substance, an inch or upwards in length, and bearing at its apex a slight, and almost inconspicuous scale, which seems to be the true stigma; although the upper part of the style is also frequently covered with the pollen from the anther. This construction of the most important parts of the flower, is so different from that of any other genus in the whole system, that it is impossible it should be mistaken. Those which approach the nearest to it, are *Maranta*, *Phrynium*, and *Thalia;* in all of which the anther is also attached to the margin of the filamentary petal, either immediately or by a short pedicel; but in the last-mentioned plants, the style is tubular and revolute, and the stigma an expanded orifice, the glutinous margins of which receive the pollen. *Canna* is therefore one of the most distinct and best defined genera in the whole vegetable system.

But although the genus of *Canna* be thus readily ascertained, this is by no means the case with the species, the number of which now discovered is very great, and in their general habit and appearance resemble each other more than is observable in almost any other genus of equal extent. Thus, in all the species, the root is perennial, either tuberous or fibrous; the culm or stem herbaceous, and covered with the sheathing of the petioles; the leaves are lanceolate-acute, with too little variety either in their form or size to afford a satisfactory specific distinction. This, however, is found by attending to the mid-rib, which, in about one-half of the species, is not placed exactly in the middle of the leaf, but is nearer one side than the other, dividing it into two unequal lobes, and forming an inæquilateral or elliptic leaf. The inflorescence is terminal, bursting from a general bracte or sheath, in a loose panicle or spike; the floral bractes are wedge-shaped and deciduous; the flowers are generally in pairs, and open in succession. The calyx consists of three small, acute leaves, of nearly equal size, sitting upon the germen, and crowning the capsule when ripe. This calyx surrounds a tubular corolla, which expands into a double margin or limb, the outer one of which consists invariably of three lanceolate segments, nearly equal, an inch and a half to two inches in length, exhibiting some diversities both of shape and colour, in the different species; the inner border, the segments of which resemble the petals in polypetalous flowers, is divided into an upper and a lower lip; the upper is erect, and is generally divided into two or three ovate, or lanceolate segments, either intire or divided at the apex; the lower lip is mostly linear, and either revolute or declined. These, together with the filament and style, which rise between them, and which they seem intended to inclose and protect, are all united at their base into one tube, forming what has been considered by our elder Botanists, as an hexapetalous flower.

It must however be observed, that in this mode of considering the organization of this genus, all Botanists do not agree. Thus Hegetschweiler, a German writer, published in the year 1813, a work entitled *Commentatio Botanica, sistens descriptionem scitaminum nonnullorum, &c.* in which he undertook to examine a few select plants, and amongst them two or three species of the genus *Canna,* with a view to define them with greater accuracy, and to trace their relations to some other genera, and particularly the *orchideæ.* His view of the subject by no means corresponds with that which we have here taken; in particular, he considers that part which we have denominated the exterior limb or border of the corolla, as an interior calyx, and restricts the real corolla

to what we conceive to be the interior limb.* These distinctions are perhaps, in fact, of little importance, if all Botanists were agreed respecting them; but this not being the case, we must here observe, that no substantial grounds appear to us to exist for considering this disputable member as a calyx, particularly as in this genus the real calyx is foliaceous and permanent, remaining on the fruit when the rest of the flower has perished; whilst the part in question is membranaceous, united in the same tube with the inner limb, and perishing with the rest of the flower. To which it must be added, that the same conformation extends also through the whole tribe of Scitaminean Plants; and consequently, if we are to consider this as an inner calyx in *Canna,* we must apply the same rule to *Hedychium, Alpinia, Zingiber, Curcuma,* &c. all of which have a permanent calyx seated on the germen, and a corolla with a double limb. The organs which this author mentions as having been found between the calyx and the corolla, and between the corolla and the parts of fructification, and which seem to have given rise to the idea of barren stamina, we have never been able to discover, in any of the numerous species which we have examined of this genus.

The first great distinction which arises on the species of *Canna,* as we have considered them, is founded on the upper lip of the interior limb of the corolla, which is in some species divided into two, and in others into three segments, which, after long experience, we have found peculiar to, and permanent in the different species. It is true there are instances, as in the *C. pedunculata,* in which some of the flowers vary with four sections, and others in which the upper lip is entirely wanting, as in *C. denudata,* but these exceptions form no substantial objection to the general rule. By this distinction, the genus of Canna is divided into two nearly equal portions, and the further investigation of them is proportionably abridged.

After deciding on the number of the segments, our attention is directed to the peculiarities of their form, and particularly whether each segment be entire and acute at the apex, or whether it appears as if a small portion had been artificially cut out; in which case it is said to be emarginate, bidentate, bifid, or notched. This again divides the species into smaller portions. The lower lip affords also important distinctions, both as to its form and termination, which is in some species intire, and in others emarginate—distinctions which it is not perhaps unreasonable to suppose were intended for the purpose of variety and discrimination, it not being probable that such a minute variation in the extremities of the flower can be of any peculiar use in the economy of the plant.

Some distinctions also arise from the exterior limb of the corolla, both as to its form and colour, and whether it be erect or reflexed. The peculiarities of the leaves, whether they be equally or unequally divided by the mid-rib, smooth or downy, green or glaucous, and the general habit and growth of the plant, afford further materials from which the student may be enabled to reduce these numerous species to an intelligible order, at the same time assigning a sufficient reason for the place which each of them occupies.

All the species of *Canna* are, we believe, inodorous. Although not equal in the variety and splendour of their flowers to several other genera of Monandrian Plants, yet they are highly deserving of cultivation, as exhibiting a genus every species of which may boast its peculiar beauty, and displaying in their arrangement as useful a lesson to a young student as any other genus of plants can supply.

These plants are chiefly natives of Brazil, and other tropical parts of America. In the Flora Indica of Dr. Roxburgh, only one species appears, which he has denominated *C. indica,* but which we have given under the name of *C. orientalis,* the true C. indica having been brought from America, and not found, as far as is yet known, in Asia. The number of species introduced into Europe has, of late years, rapidly increased. In the *Systema Vegetabilium* of Willdenow (1797,) we find only four species; in that of Roemer and Schultes (1817,) twelve; and in the edition of Sprengel (1825,) thirteen; whilst in the present work we have been enabled to give nearly double the latter number, most of which have been drawn and described from the living plants in the Botanic Garden at Liverpool.

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* "In Cannis adesse calycem duplicem, docet, ut videtur, aspectus. Nam quum Cannarum flores structura perfectiori gaudeant, nonnulla organa in medio sunt, inter calycem corollamque, et inter corrollam et genetalia. Soc foliola illa concava striata, nectarii tubo inserta, inter calycem et petala loco et structura versantur, tamen forma et structura magis ad calycem accedunt, under nomen *calycis interioris.*"—*Hegets.* p. 5.

MARANTA.

In every arrangement, whether natural or artificial, (if there be any well-founded distinction between them) *Maranta* must be placed between *Canna* and *Phrynium;* both of which it resembles, in the anther being attached to the margin of the petal-like filament; but varies from the former in the different construction of its style and stigma, and from the latter in its mode of inflorescence, which in *Maranta* is herbaceous and simple, in *Phrynium* rigid and glumaceous, with bractes of a construction peculiar to the genus. These distinctions are confirmed by the fruit, which in *Canna* is a rugose, three-celled capsule, with many globular smooth seeds; in *Maranta*, an ovate, smooth, rather oblique capsule, opening in three valves, and containing only a single, ovate, perforated seed; and in *Phrynium*, a regular capsule of three cells, and three oblong, angular, perforated seeds; diversities which, combined with other distinctions, mark the boundaries of these genera beyond the possibility of a doubt.

The result of our inquiries is, that of eighteen species of *Maranta* enumerated by *Roemer & Schultes*, in their edition of the *Systema Vegetabilium*, 1817, (No. 16 and 17 being repeated) not more than three or four can be admitted to belong to the genus, the remainder of them mostly appertaining to the proximate genus of *Phrynium.* In the still more recent edition of the same work, by Professor Sprengel, (*Gott.* 1825) the species are reduced into much less compass, some of them being transferred to the newly-proposed genus of *Calathea*, (included by us in that of *Phrynium*) and others omitted; so that the whole number enumerated as *Maranta*, amounts to ten only. Of these the *lutea* of Willdenow, the *Allouya* of Jacquin, the *obliqua* and *gracilis* of Rudge, and the *Zebrina* of Sims, must be transferred to *Phrynium;* the *Sylvatica* is the same as the *Indica*, leaving only four plants, *Arundinacea*, *Indica*, *Tonchat*, and *Gibba*, belonging to the genus; to which, however, some additions have been made, by new species, first published in the present work.

These plants appear to be all natives of the Continent and Islands of America, not a single species being enumerated in the *Flora Indica* of Dr. Roxburgh. They agree in being of perennial growth, in rising from a fibrous root, frequently producing large tubers of a farinaceous quality. In ascertaining the species, we find them either shrubby or herbaceous, flowering either terminally or from a radical scape. The stems are either erect and simple, or branching and diffuse, frequently growing in pairs, in dichotomous directions, and are either villous or smooth; the leaves are either ovate, lanceolate-acute, or linear; either equally or unequally divided by the mid-rib; green, glaucous, or variegated, mucronate, cuspidate, or otherwise characterized. These peculiarities, if carefully attended to, will, we believe, be found sufficient to discriminate all the species; which is the more fortunate, as the calyx, corolla, and parts of fructification, although characteristic of the genus, resemble each other so nearly in the species, both in form and colour, as to afford but little assistance in that respect.

In an economical view this genus is of considerable importance, comprising those plants which furnish the inhabitants of the western tropics with the excellent food called arrow-root—a kind of value which must compensate for their want of ornament, being the most simple and unostentatious plants of the whole tribe.

PHRYNIUM.

In the Hortus Malabaricus of Van Rheede, published at several times between 1676 and 1693, a plant is given under the name of *Naru-kila*, v. xi. t. 34, which seems to have been for a long time considered as a general reference for all plants of the Scitaminean tribe, which could not otherwise be ascertained. Swartz, in his *Observations*, (p. 123.) has observed, that it is of the Monandrian class, nearly allied to Thalia, and perhaps a species of that genus. Gmelin, in his *Systema Vegetabilium*, has cited it for no less than three different plants, *Myrosma Cannæfolia*, *Maranta allouya*, and *Pontederia ovata*. It is the *Phyllodes placentaria* of Loureiro, the *Globba uniformis* of Martyn, the *Maranta allouya* of Aublet, and lastly, the *Phrynium capitatum* of Willdenow, who constituted it a new genus under that name,* by which it has since been known. In his Dissertation on Monandrian Plants, in Asiatic Researches, vol. xi. p. 325, Dr. Roxburgh has given an excellent coloured figure of this plant, which may be considered as the type of the genus, and precludes the necessity of republishing it here.

In the same work Dr. Roxburgh added two other species, viz. *P. dichotomum*, (the Thalia cannæformis of Forster, *Prod.* No. 3,) and a new one from Dr. Anderson's garden at Madras, which he named *P. virgatum*. (v. *Asiat. Res.* v. xi. p. 324.) In the Flora Indica of Dr. Roxburgh, published by Dr. Carey and Dr. Wallich, in 1820, three additional species are introduced, viz. *P. spicatum*, *P. imbricatum*, and *P. parviflorum*, the latter of which is figured in the present work. It does not appear from the *Flora Indica*, that a single species of *Maranta* is known in the East.

To the plants before enumerated, considerable additions have now been made from the western world. Amongst the inedited drawings of *Plumier*, discovered on the Continent and in the islands of America, are several which, for want of a more complete description, have, since his death, given rise to doubts which it was found impossible to remove. Of these figures, some have been copied and published by the late Professor Jacquin of Vienna, in his *Fragmenta*, but without sufficient grounds for deciding on their genus. Additional light has been thrown on this subject by Mr. Rudge, in his *Plants of Guiana*, in which several specimens are given, which undoubtedly belong to *Phrynium*. The diversities between these plants and *Maranta*, have not escaped the observation of Dr. Meyer, who, in his *Flora Essequibonensis*, &c. has proposed to establish a new genus from them, under the name of *Calathea;* but although he has sufficiently shown that they cannot be united with *Maranta*, he probably had not an opportunity, from the little that was then known of the genus *Phrynium*, of comparing them, otherwise he would, perhaps, have united them together under that denomination.

The result of these inquiries will occasion a considerable alteration in the arrangement of this portion of Monandrian Plants, as given by Roemer and Schultes, in their *Syst. Veget.* (vol. i. Stutgard, 1817,) where only one species of *Phrynium* (the *Capitatum)* is introduced; whilst of eighteen species of plants described under the name of *Maranta*, ten or twelve belong to *Phrynium*, or have not yet been sufficiently ascertained. The proposition of Meyer has been adopted in some parts of the Continent, as well as in several of our Botanical periodical works; but as the establishment of a genus under the name of *Calathea*, would render it necessary to abolish that of *Phrynium*, which preceded it by several years, we have found ourselves compelled, after the fullest examination from living plants, to adhere to the appellation of Willdenow, the propriety of which we have confirmed by many additional specimens in the present work. The genus *Phrynium*, according to Sprengel, includes only the plants enumerated in the Flora Indica.

Although the species of Phrynium are very numerous, upwards of twenty being already known, besides several others in the Botanic Garden at Liverpool, which have not produced their flowers; yet the arrangement

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* Supposed from ΦΡΥΝΗ (ΦΡΥΝΟΣ,) a toad; but more likely from ΦΡΥΝΙΟΝ, or ΦΡΥΓΑΝΟΝ, a kind of dry hard plant.—*Virgultum aridum.*

of them is attended with less difficulty than most others of the Monandrian class, from the singular conformation and beautiful diversities by which they are distinguished. Their mode of inflorescence is peculiar, and may perhaps be strictly considered as radical, although the scape makes its appearance from a different part in different species; in some from the base of the stem, in others from the petioles of the leaves, and in others terminally, from the branches. After attending to this leading and permanent distinction, we may have recourse to the floral bractes, which are found of almost every variety of shape, globular or ovate, lanceolate or lozenge-shaped, lax or imbricated; besides which, considerable diversities will appear in the flower, both in form and colour, as well as in the interior bractes or glumes; one of these bractes is of a very peculiar construction, being of a carinate or quadriform shape, inclosing the floret on three sides; but this being, as far as my observations have extended, common to the whole genus, cannot be considered as a specific character. The want of this will, however, be amply compensated by attending to the leaves and petioles of the different species, which afford a greater diversity of shape than perhaps any genus known. At some times these are cut into elliptic forms, straight on one margin, and circular on the other; at others the mid-rib divides the leaf into two inequilateral lobes, but just before it arrives at the apex changes its course, and directs itself exactly to the point. Many of them are of ample dimensions, giving a magnificent appearance to the plants; and it may truly be said, that the study of this genus will, from the great singularity and variety of the species, and the extraordinary characters which many of them exhibit, be more interesting to the Botanical student than many of those of the Monandrian tribe, on which nature has conferred a much greater degree of colour and of beauty.

THALIA.

The plant from which Linnæus established this genus, in honour of John Thalius, an early German Botanist, had before been named *Cortusa*, by Plumier, who first discovered it, and gave a figure of it amongst his unpublished drawings; but that name has now been applied to a very different genus of plants.

This genus agrees very nearly in its dry, rigid habit, and ganglionated leaves, with the preceding genus of *Phrynium*, but differs both from that and *Maranta*, in the formation of its stigma, which terminates in a long flat lip, extending to a considerable distance from the orifice of the style, and slightly bifid at the apex, furnished with a viscous substance to receive the globules of the pollen. This distinction is confirmed by the more obvious character of the seed, which is simple, smooth, ovate, regular, resembling a small acorn, and cannot be mistaken for those of either of the other genera before described. On this subject the learned Mr. Robert Brown, in his *Prodromus Floræ Nov. Hollandiæ*, p. 307, has done me the honour to notice a statement in my Dissertation on *Monandrian Plants*, in the eighth vol. of *Linnæan Transactions*, in which I have said that Thalia has two smooth, shining seeds, "duo semina glabra, splendentia," an assertion which he considers as erroneous, at the same time giving a very particular and interesting account of the internal cavities in the seed; omitting however to observe, that similar cavities are also found in the seeds of both *Phrynium* and *Maranta*. The origin of this often-repeated error, if it may be so considered, is not difficult to account for, when we observe, that the bractes in Thalia are biflorous, and consequently that each bracte incloses two seeds. That these seeds are smooth and shining, is a statement which, according to my observation, stands in no need of correction.

Willdenow is certainly mistaken (*Syst. Veg.* vol. i. p. 16.) in supposing that the plant quoted by him from Rolander as *Thalia Rottboelli*, is the *geniculata*, it appearing from his description, to be the *dealbata*. "Caulis humanam staturam superans, lævissimus, simplicissimus; folia cordata, acuminata, lævia; tela Indis Americanis, quibus animalia transfigunt, præbet hæc planta;" a description which agrees perfectly with the *dealbata*, the stem of which exactly resembles the shaft of an arrow, but is wholly at variance with the zig-zag growth of the *geniculata*.

The *Thalia cannæformis*, cited by Willdenow, No. 3, and again in *Enum. Berol.*, is excluded by Prof. Link, as being the *Phrynium dichotomum* of Roxburgh, and as having never been cultivated in the Garden at Berlin.—*Link, Berol.* i. p. 2.

SECTION II.

SCITAMINEÆ.

HEDYCHIUM.

This genus, distinguished perhaps above any other for beauty, variety and fragrance, has suddenly arisen to an extent and importance, of which, a few years since, the admirers of this tribe of plants could scarcely have formed an idea. The only species known in this country, when the new arrangement of Monandrian Plants was published in the year 1807, in the eighth volume of the Transactions of the Linnæan Society, was the Hedychium Coronarium or *Gandsulium* of Rumphius; which on account of its fragrance is cultivated by the natives of the East, the Malay women ornamenting their heads with the flowers, or sending them to their lovers to remind them of their vows. No further additions are made to the species in Dr. Roxburgh's description of Monandrian Plants, in the xi. vol. of the Asiatic Researches, published in the year 1810; in which the author observes, "he had only seen this most beautiful plant in its cultivated state, though a native of various parts of India, the *Malay Archipelago, &c.*" The same species is also the only one found in the gardens at Kew at that period, as appears by the 2nd edition of the *Hortus Kewensis*, published in that year. Between the years 1810 and 1820, some additions were made to the species of this genus, and in an article in Rees's Cyclopædia, published in 1819, by Sir J. E. Smith, four additional species are given and described, *Ellipticum, Spicatum, Thyrsiforme* and *Coccineum;* all of which will be found figured in the present work. For a satisfactory description of this genus and its species, as far as they were then known, we cannot do better than refer to that publication. Since that period, by the kindness and communications of Dr. Carey, of Serampore, and Dr. Wallich, of Calcutta, to the author, and their liberality to the directors of the Botanic Garden at Liverpool, in supplying them with new and important species of this genus, chiefly discovered by Mr. Wm. Carey in his excursions through various parts of India, or by Dr. Wallich on his journey into the territory of Nipal, the number has been so extended, that this work will be found to contain no less than 17 well ascertained species, exhibiting a beauty, elegance and variety, which can only be equalled by the extraordinary and diversified fragrance with which every different species is endowed. The value of these plants was enhanced by the learned and judicious remarks by which they were in general accompanied, and of which I have frequently availed myself in the descriptions here given.

Nor must it be thought that the plants here referred to contain nearly the whole of those which are already known of this very extensive genus. In a letter from Dr. Wallich, written shortly after his return from Nipal, and dated 4th December, 1824, he says, "I venture to affirm there is not a more difficult family in the whole extent of phænogamous plants, than that which you have chosen for your present botanical labours. Its members are as numerous as their discrimination is extremely arduous. I have found the *Hedychia* difficult beyond what I had anticipated; nor was it until my visit to Nipal that I could attain at any sort of satisfactory results concerning them. The instant culture intervenes, they become rebellious and unmanageable; often running into each other, and assuming new appearances; and characters which were thought constant, becoming useless. I have been obliged to abandon my former arrangement of this lovely tribe, and with your indulgent permission, shall now attempt to present you with an outline of the *genus*, as it has come under my own observation."

Dr. Wallich then proceeds to give the characters of 19 species of the present genus, comprehending most of those now included and figured in the present work. On a strict examination I find, however, four species described by him which have not occurred to our notice in the Botanical Garden at Liverpool, but which from his descriptions, I judge to be specifically different from any we have yet seen. That living specimens of the greater part or the whole of these plants, may have been sent from Serampore or Calcutta to Liverpool is not improbable; but the danger which attends the conveyance of living plants from Asia to Europe, the effects of which we have so often had occasion to lament, has perhaps prevented our receiving them.

1. "*H. Trilobum.* Wall. Spica elongata, pauciflora, squamis convolutis remotiusculis, unifloris; labello obcordato, trilobo, filamentum discolor bis superante, lobo intermedio cuspidato. Nipal.

Distinct from Spicatum as well as from all the rest, approaches most to that species."

Of this plant Dr. Wallich has published a figure drawn and engraved by native artists, (and by an error which he has corrected in his correspondence with me inscribed H. *spicatum*) by which it appears from the short filament and trilobate lip to be a very distinct species.

2. "*H. Roscoei.* Wall. Spica oblonga, elongata, fasciculis trifloris; limbi laciniis interioribus cultriformibus; labello rhomboideo, subrotundo, obtuso, plicato, bilobo; lobis obtusis, ungue brevi; stamine concolore, labellum bis superante; foliis lanceolatis, patentibus, subtus glabris. Nipal."

3. "*H. Speciosum.* Wall. Roxb. in Fl. Ind. v. i. p. 13. Vicinity of Silhet. I have only now dried specimens."—I shall only remark in addition to Dr. Wallich, that the H. Speciosum is the only species which I have seen of this genus in which the lip is entire.

4. "*H. Gracile.* Roxb. Fl. Ind. and Corom. Plants."—Vide description of H. Glaucum in the present work.

In a collection of specimens of dried plants of the order *Scitamineæ*, sent me by Dr. Wallich, in the year 1819, I find also a plant of one intirely different from any of those before noticed. It appears most nearly to resemble, particularly in its bipartite lip and hairy bracte, the *H. villosum* figured in this work, but differs in its filament which is shorter than the lip, and in the form of the anther, by which *villosum* is distinguished from all its congeners. It is also characterized by a long, linear lanceolate leaf; circumstances which have induced me to record it as a distinct species under the name of *H. hirsutum.*

The *H. coronarium*, from which the genus seems to have obtained its name, is said to have been cultivated in this country before 1791, by Robert Udny, Esq. The numerous additions since made, have, as Dr. Wallich justly observes, rendered the arrangement of them difficult; but the beautiful diversities and permanent distinctions which an attentive examination affords, have made this labour not an unpleasing one.

The most striking and most invariable distinction in ascertaining the species, is founded on the filament, which in some is shorter than, or subequal with, the lip, and in others longer. This distinction is so striking, that whenever the filament is longer than the lip, it is generally, if not always, double its length, so that it is almost impossible to mistake it. The next distinction upon which the species of this genus may be founded, will be derived from their general habit or mode of inflorescence, it appearing that some species flower irregularly in a loose spike, with involute or tubular bractes, others from an imbricated head with lax or closely compressed bractes, and others again in a regular spike of a singular construction, by which the flowers are beautifully arranged in fascicles of threes, alternating with each other on a strong, erect, common rachis, so as to form six distinct upright lines, which producing their flowers in succession, give a more striking effect and permanency to their appearance. In fact, if beauty and fragrance were the sole objects for which plants were cultivated, we know of none that are to be preferred to this genus.

ROSCOEA.

This genus was established in the year 1805, by Sir J. E. Smith, President of the Linnæan Society, in the second volume of his Exotic Botany, the type of it being the *Roscoea purpurea*, given by him from a drawing and specimens in Dr. Buchanan's collection. This plant has since been introduced, and has frequently flowered in this country, and many additional species have been discovered in the district, or the vicinity of Nipal. Of several of these the author of the present work received specimens, from his learned friend Dr. Wallich of Calcutta, in the year 1819, which were shortly afterwards inspected by Sir. J. E. Smith, then on a visit to Liverpool, who instantly recognized them as different species of this genus, and was enabled therefrom to confirm, and to improve its generic character, of which he afterwards drew up a more particular account, as under:

"ROSCOEA. *Smith, Exot. Bot.* ii. 97.

Ess. CHAR.—*Anthera* biloba, incurva, terminalis, stylum vaginans, basi bicalcarata; corolla ringens, limbo duplici; labio superiore fornicato; calyx monophyllus tubulosus.

1. R. *purpurea. Exot. Bot.* tab. 108; spicâ foliorum vaginis obvolutâ, calyce obliquo integro.
2. R. *gracilis*, spicâ exsertâ pauciflorâ laxa, calyce retuso.
3. R. *elatior*, spicâ exsertâ multiflorâ subcoarctatâ, calyce retuso.
4. R. *spicata;* spicâ exsertâ multiflorâ coarctatâ, calyce emarginato, nudo, foliis lanceolatis.
5. R. *capitata;* spicâ exsertâ capitatâ multiflorâ, calyce bicuspidato ciliato, foliis linearibus.

These new species all partake, more or less, of the habit of the original one, and are well distinguished by characters derived from the calyx, that being the part, in *Roscoea*, in which the real specific differences principally reside." v. *Trans. Lin. Soc.* v. xiii. p. 460.

It is further observed by Sir J. E. Smith, that "this genus should be arranged near *Hedychium* and *Kæmpferia*, to both of which it has some points of affinity; but the striking character of the irregular two-lipped outer limb of the corolla, and the peculiar appendages to the base of the anthera, clearly distinguish it from the whole tribe." *Exot. Bot.* v. ii. p. 97.

In addition to the foregoing observations, we may here be allowed to notice that in the principal feature upon which the more recent distinctions of the plants of the Scitaminèan order are founded, the genus *Roscoea* approaches the nearest to that given in the present work under the name of *Renealmia.* This resemblance consists in the peculiar construction and position of the anther, which instead of being supported on a proper filament, is, in both these genera, intirely naked, and fixed in the faux of the corolla, to which it is bound by a short, flat, flexible ligament, inserted at the base of the upper lip of the outer limb. Thus forming a group of plants perfectly distinct in their botanical character, and sufficiently characterized by this feature only from all the rest of the tribe.

RENEALMIA.

It is with great satisfaction that we now find ourselves enabled to remove some considerable difficulties which have hitherto attended the definition and arrangement of a very important portion of the tribe of Scitaminean Plants, and to restore the genus *Renealmia* to its proper station, of which it has been so long deprived. Some account of the establishment of this genus by Linnæus, will be found in the observations on the ensuing figure of *Renealmia exaltata,* the type on which it was founded. The near resemblance of this plant to *Alpinia,* induced several Botanists to consider it as a species of that genus, and some observations on that subject, expressing a doubt respecting it, may be found in *Transactions of Lin. Soc.* vol. viii. p. 344. Subsequent information and more perfect specimens, which will be detailed in the ensuing observations on the figure of *Renealmia exaltata,* have removed all doubts on this head; and it now appears that Linnæus was perfectly correct in considering this as a separate genus, distinctly characterised from every other of the Scitaminean tribe. The generic distinctions between *Renealmia* and *Alpinia* are sufficiently marked by the anther, which in *Renealmia,* is naked both at the front and back, and is closely attached at the back by a short flexible ligament to the faux of the corolla, at the base of the middle segment of the outer limb; whilst in *Alpinia,* the anther is placed on the front of a strong, clavate, proper filament, which elevates it considerably beyond the tube of the flower, and entirely covers it at the back; an essential difference also appears in the stigma, as our figures and descriptions will fully show. It may also be observed that all the species of *Renealmia* exhibit a peculiar involucrum or perianth of one leaf, seated below the germen, divided at the apex into two, three, or four sections, according to the various species, and covering the germen and the greater part of the superior calyx. To this may be added, that the seeds of the *Renealmia,* according to their different kinds, possess a powerful *aroma* of considerable use both in medicine and for domestic purposes, which is not the case with *Alpinia;* and that even with regard to the *Renealmia* of the Western world, the seeds have long ago been described as having the taste of *Cardamom.*

I have no hesitation in expressing my opinion that this genus will be found, on further inquiry, to include several other species of the greatest importance both in the Eastern and Western world. In particular, I have little doubt from what I have seen of the figures of Marcgrave and Plumier, who have represented it under the name of *Paco Seroca,* that the plant now known by the name of *Alpinia occidentalis,* will fall under this description; but the fullest account will be found in the supplement to Rees's Cyclop. by Sir James Ed. Smith, under the title of *Alpinia,* where all that is yet known of this plant is detailed with many judicious observations upon it. We have also reason to believe that other plants at present described by different authors, as species of Alpinia, under the names of *A. racemosa, jamaicensis, aromatica,* &c. will be found on further examination to belong to *Renealmia.* The flowers of *R. occidentalis,* of which we have before us a spike preserved in spirits, are unilateral, or, as expressed by Sir J. E. Smith, *all turned upwards,* and the capsules, globose; but we have also specimens of seeds, both dried and in spirits, in which the spike is compound, the capsules are promiscuous and ovate, and which evidently indicate other species different from *Occidentalis,* and which remain to be further described.

To the same genus *(Renealmia)* I should also refer the plants given in Dr. Roxburgh's *Flora Ind.* (vol. i. p. 68) as radical flowering *Alpinias,* which appear from the figures of them in *Corom. Plants,* to have a large naked anther, placed at the apex, of a strong erect filament, as in *Alpinia,* but in the faux or mouth of the corolla, and attached by a short ligament, or process, to the back or middle section of the outer limb; they are also characterised by the large double calyx, one below, and the other above the germen.

In the group of plants before noticed as radical flowering *Alpinias*, is the celebrated plant which produces the *Cardamom* of the shops, and which is cultivated in India to a great extent, and forms a considerable article of commerce. Of this plant I had hoped to have given a figure in the present work, it having grown for many years, and there being now one in the Botanic Garden at Liverpool, probably the finest plant in the kingdom; but this plant has never yet produced its flowers with us, nor are we certain that it has ever flowered beyond the limits of Asia. Deprived therefore of the opportunity of examining the flowers in a living state, we are compelled to refer to such authors as have themselves seen it, and particularly to the figures and description of Dr. Roxburgh in the 3rd vol. of *Corom. Plants*, No. 226, and to those of Mr. David White in *Linnæan Trans.* vol. x. p. 229, from which, and especially from the latter, it is evident this plant cannot be considered as an *Alpinia*, or as uniting with any other genus of the Monandrian tribe than *Renealmia;* being described and figured by Mr. White as having a double calyx, one below, and the other above the germen, a naked anther, with no *filament*, but with its conical points free, and projecting into the mouth of the corolla, and an *obtusely triangular stigma*, all characters strikingly different from Alpinia, which has a *strong erect filament, covering the anther at the back*, and an open *cup-shaped stigma*, characters demonstrating discrepancies between the genera which it is impossible to reconcile.

That this plant cannot be either an *Alpinia* or an *Amomum*, has been fully shown by Dr. Maton, (in his remarks on the dissertation of Mr. White in *Trans. Lin. Soc.* vol. x. p. 249) where he has constituted it a new genus, under the name of *Elettaria*, (from *Elettari*, the original Malabar appellation as given in the *Hort. Malabar*,) a name which has been adopted by Sir J. E. Smith, (in *Rees's Cyclop. supplement in loco.)* But if further inquiries should confirm our foregoing suggestions, and the plant in question should prove to be properly comprised under the established Linnæan genus of *Renealmia*, we shall have the pleasure of seeing two of the finest plants in the East and West included in the same genus, with the addition of several other plants, which will render it one of the most important and beautiful of the whole system.

We are greatly confirmed in the opinions we have adopted on this subject, by the judicious observations in the Botanical Register accompanying the figure there given of *Alpinia tubulata*, tab. 777, (undoubtedly the *Renealmia exaltata* of the present work,) where it is said that the flower is more strictly tubular and proportionally longer than in that group, (the terminally flowering *Alpinias)* that the anther is *sessile*, instead of being elevated by the filament, that the inflorescence terminates in a lateral scape, which is enveloped by sphacelately membranous sheaths, instead of a central stem enveloped by a green foliage, in which last circumstance, it is observed, "the plant probably coincides with *Alpinia occidentalis*, and the *second section* of the genus (or radical flowering Alpinias) as arranged in the Flora Indica of Roxburgh." The editors then proceed to state, "that they have fixed the plant they have there given in its present place, *(Alpinia)* rather from an agreement in respect to the *technical* character of *Alpinia*, than from a conviction of the species being a good member of the group;" but I trust that I have sufficiently shown that this plant, even in its technical character, not only differs from *Alpinia*, but forms an important species of the genus *Renealmia*, as will appear by comparing the print given in the present work, with the figures of Dr. Roxburgh and Mr. White, of the true *Cardamom* plant of the East, before referred to.

Mr. Andrews, in his Botanical Repository, disregarding the principle upon which the genera in the tribe of Scitaminea is founded, has given two plants as *Renealmia*, viz. vol. v. fig. 360, *Renealmia Nutans*, vol. vi. fig. 421, *Renealmia Calcarata*, both of which will be found, on examination, to be *Alpinias*, and as such are given in the present work.

ALPINIA.

Of this very elegant and diversified genus, the most full and particular account hitherto known, is that given by Sir J. E. Smith, in the Supplement to Rees's Cyclopædia, (Art. Alpinia.) It was originally proposed by Plumier in honour of Prosper Alpinus, the celebrated author of a work on Exotic Plants, published in 1629, and was afterwards adopted by Linnæus. It is known from all the other genera by various particulars, but is sufficiently discriminated by its strong erect filament, supporting in front at the apex a large double anther, which it completely covers at the back, but does not extend beyond. By a strict attention to this circumstance, it will not be found difficult to divest this genus of many plants which have formerly been confounded with it, and to combine together, by a truly natural distinction, as beautiful a group as the tribe of Monandrian Plants can supply.

Of this species Sir J. E. Smith has enumerated 17, seven of which will be found figured and described in the present work. It was also my intention to have given a specimen of the *A. malaccensis*, figured by Rumphius and also in Bot. Reg. No. 328; with which view I had requested my late highly esteemed and respected friend Walter Fawkes, Esq. of Farnley, in Yorkshire, to furnish me with a plant from his conservatory,—a request with which he cheerfully complied, and by which I was enabled in a short time to supply, not only the Liverpool Botanic Garden, but several of my friends with specimens; but although many of these have grown freely, and are now upwards of six feet high, they have none of them yet produced their flowers,—a disappointment which I the more regret, as this plant is described by Dr. Roxburgh, (*Asiatic Researches*, vol. xi. p. 354.) as being the "most stately and most beautiful of our Scitaminean Plants; the flowers particularly large, with the bractes and exterior border of the corolla, pure, smooth, lucid white, and the large lip variegated with crimson and yellow." I am fortunate, however, in being able to add to this genus, the two fine species *A. auriculata*, and *A. magnifica*, the latter of which I regard as a surprising instance of the varieties assumed by nature in the formation of genera, and as a decisive proof, that for true generic distinctions, we must rely alone upon the organs of fructification.

Since the publication of the portion of my work which contained the figure of the *Alpinia Magnifica*, I have received through the kindness of my friend Dr. Hooker, a drawing of the root, and of the capsule and seed, (the scape of which is about an inch in diameter, and six feet high,) made by Mr. Telfair at the Mauritius, but too late to be introduced into the present publication. I trust, however, Dr. Hooker will avail himself of some early opportunity of laying these curious figures before the public, in some of his interesting publications, and will enter into the consideration of the question proposed by Mr. Boyer, (Professor of Botany, at the New College in the Mauritius,) who dissected the plant, and who thinks that between the seeds of this plant and the other species of *Alpinia*, there are important differences; an inquiry into which I cannot at present enter.

Of the twelve species of *Alpinia* enumerated in the Flora Indica, four have a radical inflorescence, and differ greatly from *Alpinia* in their organs of fructification, for which latter reason I consider them as species of *Renealmia*. See the foregoing description of the genus *Renealmia*.

HELLENIA.

"The name of Hellenia was first proposed by Retzius in honour of Professor Hellenius, of Abo, and applied to designate the plant now called *Costus speciosus,* which had before been named by Kœnig *Banksia speciosa,* and which Retzius had before intended to name *Swartzia ;* but found that two genera had already been named, by different persons, after the eminent Botanist to whom that appellation alludes. Wildenow being aware that this plant was the *Costus speciosus,* abolished the name of Hellenia, as applied to it, but gave the same name to another tribe of Monandrian Plants, the *languas* of Kœnig ; which Retzius had before, in his sixth fasiculus, named *Heritiera,* that appellation having also been pre-occupied." *Note in Trans. Linn. Soc.* vol. viii. p. 344.

This group of plants not appearing, from the descriptions of Retzius, to be sufficiently distinguishable from Alpinia, we deemed it expedient on the occasion above referred to, to include them in that genus, a decision which has been confirmed by Sir J. E. Smith, who has inserted them in his species of Alpinia in his dissertation in *Rees's Cyclop.* under the names of *A. alba, A. chinensis,* and *A. aquatica.*

The only certain authority that then remained for the genus *Hellenia* was the *Allughas* of Linnæus, *(Zeylan.* 207.*)* the genus of which is described by Mr. Brown, "filamentun lineare, ultra antheram, marginalem productum, lobulo brevissimo, retundato, integro vel bilobo." *Prodromus Fl. Holl.* 308, and by Sir J. E. Smith as distinguished by "a very short, rounded, terminal appendage." This plant has since produced its flowers in the Botanic Garden at Liverpool, and a figure of it is given in this work; from which it will appear, that the filament *does not extend beyond the anther,* but terminates *without a crest or other appendage,* and consequently that it cannot be made the type of a new genus which is proposed to be founded on the filament being extended *beyond* the *anther* either in a simple lobe, or a bifid form.

Another plant has however since been figured in the Bot. Reg. (No. 1037) under the name of *Hellenia cærulea,* with a doubt "whether there be not more species than one in New Holland referable to the genus Hellenia." This plant has also since flowered in the Botanic Garden at Liverpool, and from the observations we have been enabled to make upon it, we find it not only entirely different from the *Hellenia cærulea* of Mr. Brown, but a very distinct and beautiful (though small) species of *Alpinia.* In this examination our attention was chiefly directed to the character of the genus, in which we found that the filament does not extend beyond the anther, but terminates, like every other correct species of *Alpinia,* with that organ, for which reason we have described it as "filament short, erect, thick, supporting the anther at the upper part and not extending beyond it; anther in two lunate lobes receiving the style between them, the stigma projecting a little beyond them." It was our intention to have given a figure of this plant in the present work under the name of *Alpinia pulchella,* but circumstances have prevented our accomplishing this purpose. If then we suspend our opinion until we receive further information respecting the three species of the Languas of Retz. at present arranged under Alpinia, and admit the Allughas and the plant figured in the Bot. Reg. as *Hellenia cærulea* to be also of that genus, we shall have no plant on which to found the genus Hellenia, as far as my information extends, except that figured in this work, which I conceive to be the species described by Mr. Brown in his *Prodromus Nov. Holl.*

COSTUS.

This is one of the most interesting and singular, and at the same time one of the most beautiful genera of the Scitaminean tribe, although it is only of late that it has been sufficiently investigated and understood. In fact, for a long course of years the names of *Costus*, *Alpinia*, and *Amomum*, were interchanged with each other, without any certain characters by which they might be distinguished; and it is only since these characters have been explained, and confirmed by numerous species, recently discovered, that we have been enabled to place this genus in its proper light, and to exhibit it in the splendour of which it admits. In the first edition of the Hortus Kewensis, only one species, the *Costus Arabicus*, is mentioned, as a native of both Indies, cultivated by Mr. P. Miller, in 1752. In the second edition of the same work (1810) three species are mentioned, viz. *Speciosus*, *Arabicus*, and *Spicatus*, the first of these introduced by Sir Joseph Banks, after whom it was named *Banksia*, by Retz. Fas. 3. 75. The *Arabicus* is the *Costus glabratus* of Swartz. The *Spicatus* is the *Hellenia grandiflora* of Retzius, and is figured by Jacquin in his early work on American Plants, tab. i. as *Alpinia Spicata*, but will be found in the present work as *Costus Spicatus*, and these three species are repeated by Wildenow. Of this genus a small portion only have been supplied from the east. Neither the list of Monandrian plants by Dr. Roxburgh in the xi. vol. of *Asiatic Researches*, nor his *Flora Indica* contain more than one species, the *C. Speciosus*; whilst the discoveries made by Plumier upwards of a century ago, on the Continent and in the Islands of America, furnish us with numerous and valuable figures of this genus, which it is greatly to be regretted have not hitherto been published, except so far as Jacquin has inserted a few of them in his *Fragmenta*.

The *Costus Arabicus* of Aublet, v. i. p. 2. is the *Alpinia Spicata* of Jacquin, and is the *Costus Spicatus*, given in the present work. The other species of Aublet are all repeated from Plumier.

In the *Syst. Veg.* of Roemer and Schultes we find enumerated thirteen species of Costus, viz.—

1. Speciosus.
2. Arabicus.
3. Spicatus.
4. Comosus.
5. Spiralis.
6. Cernuus.
7. Cylindricus.
8. Anachiri.
9. Niveo-purpureus.
10. Villosissimus.
11. Scaber.
12. Lævis.
13. Argenteus.

Of these the *Speciosus*, *Arabicus*, and *Spicatus*, are before noticed; *Comosus* and *Cernuus* are the *Cylindricus* of the present work; *Spiralis* is here given under that name; *Cylindricus*, *Anachiri*, *Niveo-purpureus* and *Villosissimus*, are adopted from Plumier. *Scaber*, *Lævis*, and *Argenteus*, are from the *Flora Peruv.* of Ruiz and Pavon. Professor Sprengel has given 12 species, omitting the *Anachiri*, *Niveo-purpureus* and *Villosissimus*, of Roemer and Schultes, substituting the specific name of *Glabratus* for that of *Arabicus*, adding also *Secundus* and *Linearis* from the Flora Indica of Dr. Roxburgh; where, however, those plants are given as Kæmpferias.

Mr. Brown has remarked that *Costus* may be known at first sight, even without the fructification, from all other Scitamineæ, by the sheathing above the insertion of the leaf called the *ocrea*. *Prodr.* p. 308. But the most certain character when the plant is in flower, is perhaps found in the style and stigma; the former of which is not supported at the base by two hornlets or glands, as is the case with all other true Scitamineæ; but instead thereof is furnished at the extremity of the style, at the back of the stigma, with two small blunt lobes; which probably answer the same purpose in *Costus*, as the hornlets do in other Scitaminean Plants.

With respect to the species, they all agree in having a cylindrical ascending spiral stem, and alternate leaves, with short petioles, sheathing the stems at each joint by a close ligament or *ocrea*, which in some

species, is ciliated with fibrous threads; the leaves are generally broad-lanceolate, obtuse, or broader towards the apex than the base; æquilateral, or inæquilateral, at some times hirsute, or downy, on both sides, at others on the upper or under side, and at others on the midrib only. Such is the diversity in this respect that the species might be sufficiently characterized solely by the leaves; some of which differ in colour on the under side from that of the upper. Their inflorescence is generally terminal, but instances have of late appeared of a radical inflorescence, as in *C. Maculatus*, given in the present work; and it may deserve notice that we have since seen the same plant bearing radical and terminal flowers at the same time. In some species the spike is imbricated with close bractes, bearing many flowers, opening in succession, in others lax, with but few flowers, but of great splendour; there is also a considerable diversity as well in the exterior floral bractes as in the conformation and colours of the flowers; which together with the particulars before referred to, render the arrangement of the species of this genus a work of less difficulty than that of most other Scitaminean plants.

The Botanic Garden at Liverpool possesses at present upwards of twelve different species of *Costus*, amongst which are fine plants of the *Arabicus*, *Speciosus*, *Spicatus* and others, which have not yet produced their flowers with us.

ZINGIBER.

That this genus is distinguished from the rest by its inflorescence, is an assertion invalidated by an inspection of the species published in the present work; from which it will appear that there are some species that flower from a radical scape, and others with a terminal spike; and consequently that these can be considered as nothing more than specific distinctions.

For a long series of years the Zingiber was included by all botanists under the genus Amomum, although strikingly different both in its generic characters and its inherent properties. In adopting the name of Zingiber, Gærtner appears to have made the distinction, but this is not in fact the case; the plants he has described under that name being all of the Amomum tribe. No genus is now more certainly known at first sight by its peculiar filament than Zingiber; to resort to the inflorescence, is to rely on a fallacious rule.

All the known species of Zingiber are natives of the East. In the Flora Indica of Dr. Roxburgh, eleven species are described, eight of which flower radically, and three terminally. Of the former number, six species, and of the latter, two are figured in the present work; besides which a fine species, which flowered in the Liverpool Botanic Garden, and not heretofore described, has been added; to which I have given the name of *Z. Chrysanthum*, on account of the splendour of its radical flowers.

Of the six species given in the *Systema Veg.* of Roemer and Schultes, the *Z. purpureum* is the same as the *Z. Cassumunar* of the present work. I believe the mistake arose with myself, having received the plant without a name, and conceiving it to be a new one, when I grew it upwards of 20 years ago, and gave it that name.

KÆMPFERIA.

Dr. Roxburgh remarks "that this genus as it now stands is neat and natural; the characteristic crest of the double anther large and bifid, or bidentate, and that the ripe seed vessel has not been seen; so rarely do they arrive at that state." *Roxb. in Asiatic Res.* vol. xi. p. *326, 327.* All the species known of this genus are of Eastern origin. Of the six species given in the present work, two flower radically before the appearance of the leaves, two from the centre of an erect petiolate foliage, and two from the middle of broad, ovate, bifarious, recumbent leaves; serving as an additional proof that the mode of inflorescence in *Scitamineæ* is not to be depended upon as a generic distinction.

Dr. Roxburgh in his description of Monandrian Plants, published in 1810, has only given four species of this genus; *K. galanga, K. rotunda, K. angustifolia,* and *K. pandurata,* to which I have added *K. marginata* and *K. ovalifolia.* The roots of these plants are all aromatic, and are cultivated by the natives for medical or culinary purposes, and approach nearly to the taste and quality of Curcuma.

Dr. Wallich, in his edition of Dr. Roxburgh's Flora Indica, now publishing conjointly with Dr. Carey, of Serampore, has added two new species to Kæmpferia, *K. secunda* and *K. linearis,* from dried specimens sent to him from the mountains north east of Bengal under the *Khassee* name, *Kattia-jorung.* Flowering time, the rainy season.

Dr. Wallich observes, that in the structure of their extremely thin and membranaceous flowers, these two plants are so much like Kæmpferia, that he has not considered himself warranted in separating them, though the character of that genus differs in the shape of the crest; which in these plants are perfectly entire, and on this account resembling that of *Costus.* Dr. Wallich, therefore, makes a new division of these two plants, as *caulescent with a divided crest;* but Professor Sprengel in his *Systema Veg.* now publishing, has considered them as belonging to Costus.

No such uncertainty attaches, however, to a fine new species of *Kæmpferia,* discovered by Dr. Wallich on the Tong Dong mountains, 30 miles beyond the Burmese capital, (Ava) to which, and also to a superb species of Curcuma, with large igneous spikes, which he found in Pegu and the Tenasserim coast, he has done me the honour of associating my name, in the 14th volume of the Botanical Register, No. 12; an honour greatly enhanced by the kind and affectionate terms of friendship and respect in which it is expressed. Besides this new species of *Kæmpferia,* the flowers of which are white, and the leaves extremely beautiful, being marked on their upper surface with dark green or purple belts or spots, not very unlike the leaves of *Maranta Zebrina.* Dr. Wallich has brought with him from the Burmese territory to England, on his recent visit, in his large and invaluable collection of East India plants, three other new species of *Kæmpferia,* viz. one from the Teak forests on the Attran River, in Martaban, *K. candida,* and two from Pegu and Martaban, *K. Craufurdiana* and *K. parviflora;* making in the whole 10 species now known, exclusive of the two doubtful ones, of this very interesting and beautiful genus.

AMOMUM.

One of the most extensive, and at the same time the most obscure and difficult of the genera of Scitaminean Plants. This will not appear extraordinary when it is considered, that but few of the species have hitherto flowered in Europe. The flowers of this genus seem also to be the most delicate and perishable of the whole order, insomuch that when sent as dried specimens from abroad, they seldom arrive in such a state as to afford an opportunity of examining those minuter and more essential parts, on which their botanical characters depend; the fermentation proceeding from the saccharine and aromatic nature of the flowers, uniting with the tribes of minute insects which infest them, rapidly to destroy all the finer parts.* The only mode of obtaining these very interesting plants from abroad, in a state suitable for examination, is by preserving them in spirits, secured from external air; by which process their most minute and delicate organs may be ascertained with the utmost precision, although the colours of the flowers are generally lost.

Another cause of the difficulties in which this part of our subject yet continues to be involved, is to be attributed to the erroneous ideas of our early botanists, who not being acquainted with any determinate and certain method of defining and arranging this portion of the vegetable kingdom, and finding that *Amomum* was the name of an aromatic plant well known to the ancients, referred to this head almost all the plants of this tribe which occurred to their notice. Thus the *Zingibers* (themselves a numerous genus) although essentially different, both in their conformation and properties, were, until these very few years, included in the genus *Amomum*, as were also several of the species of *Costus* and *Alpinia;* nor is it by any means certain that many plants which are still retained and enumerated in our general systems under this head, will not, when more accurately ascertained, from an examination of living plants, be found to belong to other genera.

The most effectual attempt that has yet been made to elucidate and arrange this genus, is that of Sir James Edward Smith, published in the Supplement to Rees's Cyclopædia, under the title *Amomum*, and rectifying in some respects the original article in the body of that work. In this dissertation the learned author has not only given a full and accurate history of the genus, but has followed it by a particular description of every species, as far as the information existing respecting them extends. Since that period to the present, very few additional acquisitions have been made; and I shall therefore content myself on the present occasion with referring the reader to that very popular work, where he will find all that is at present known on the subject, fully stated, and subjected to an impartial and enlightened criticism. In this dissertation, sixteen species are enumerated, with their proper synonyms and history, as far as any information could be found respecting them. The *Systema Vegetabilium* of Roemer and Schultes, since published, contains *twelve* admitted, and *seven* doubtful species, all reduced afterwards to *ten*, and the still later work of Sprengel, enumerates *twenty* species, amongst which are doubtless several repetitions.

In the Botanic Garden at Liverpool are several plants which have not yet flowered, but which have been received as species of *Amomum;* amongst these is one that has been grown there for several years, sent by the late Dr. Roxburgh under the name of *Amomum Taracca*, which scarcely reaches the height of two feet, and whose stem and leaves have a scent strongly resembling cinnamon.

All the species of *Amomum*, as far as we are acquainted with them, flower laterally from the root; this genus is, according to Sir J. E. Smith, "one of the most natural that can exist in any natural order;" but the arrangement of the species is attended with great difficulty from the want of information respecting those parts of the fructification on which their distinctions principally depend. Deprived in most cases of the opportunity of examining the corolla, we are compelled to resort to the fruit, which there is reason to believe would, if we could depend on the specimens occasionally found, sufficiently distinguish the species. These we apprehend might be divided into two portions, viz. such as have a fibrous capsule, opening in three lobes, and such as have a thick pulpy capsule of one cell, with an interior columella, or receptacle, in which the seeds are imbedded in a tomentose substance. The various forms and size of the capsules exhibit other diversities, and the peculiarities and qualities of the seeds, may also be resorted to for a similar purpose.

* Ex viginti circiter Amomeis in Herbario Bonplandii a me repertas, quatuor tantum cognita sunt. Reliqua nova; quas tamen non descripsi, ob florum corruptionem et cariem."—*Kunth in Humb. et Bonpl. Nov. Gen.* p. 264. *Ap. Roemer & Schultes*, v. i. p. 572.

CURCUMA.

If *Hedychium* be the most splendid, and *Alpinia* be the most elegant, *Curcuma* is undoubtedly the richest and most magnificent of the whole tribe of Scitaminean Plants; the lively and variegated colours of its singularly constructed flowers, the grandeur of its crimson and turban-like coma or crown, and the luxuriance of its ample foliage, beautifully diversified with red in its stems, its petioles, and its leaves, all contributing to add to the Eastern-like magnificence of this stately genus. But if we admire it for its beauty, we shall find still greater reason to value it for its many useful properties; in the variety and importance of which it is not perhaps exceeded by any of the vegetable tribe, as a brief account of it will sufficiently show. These properties reside in a great degree in its roots; which are large succulent tubers of various kinds, sizes, and shapes; some remaining near the surface, whilst others penetrate very deep into the ground. These roots are distinguishable into three distinct kinds, viz. 1, a tunicated bulb, resembling the root of a large tulip, from which the foliaceous stem rises, and also the lateral scape, when the inflorescence is radical; as is the case with the greater number of the species. 2, the large spreading digitated or palmate tubers, surrounding the base of the floral bulb, and being of the shape, and in many species, larger than the human fingers. These tubers each contain, or rather, are composed of a hard fibrous pulp, saturated with a peculiar *aroma*, medicine, or pigment, of a peculiar kind, which it gives out by a simple process either to spirits or water; of these, some have been known and employed for ages, as well in Europe as the East for their highly valuable medicinal properties; as the *Zedoary*, for its warm, bitter, aromatic qualities; on account of which it was formerly highly recommended here as a stomachic in colics and nervous affections; and although now supplanted by more active remedies, is certainly an agreeable, safe, and elegant corroborant. The *C. cæsia*, or blue Curcuma root is used, when bruised by the Hindoos, for removing pain and swelling of the joints, and it is probable that most of the species are useful in complaints where strong aromatic applications are desirable. These roots, when intersected by the knife, exhibit various colours, according to their species, as yellow, straw colour, orange, green, as in *C. æruginosa*, blue as in *C. cæsia, &c.;* another use to which the palmate tubers are applied by the natives of India, is as a spice to season their curries; of the *dyes* obtained from the Curcuma, the most celebrated is the *turmeric* or *saffron di terra*, which is produced by the *Curcuma longa*, and is well known as an extensive article of commerce; nor is it improbable that other species would, if carefully analysed, be found to contain dyes of different tints, and not inferior value. *3*, from the bulbs and tubers before described, proceed numerous strong round cords, or fibres, which shoot down into the ground to a considerable depth, and each of them generally terminates in large, farinaceous, succulent bulbs, of a very different kind from those before described, being about the size and shape of a large pear; the substance of which contains a very slight aromatic pulp, which nearly evaporates in drying. These bulbs, like so many other productions of the vegetable kingdom, serve a double purpose, as regarding both the plant itself, and the human race. In the first instance as reservoirs of moisture, in those arid climates, for supplying the upper roots with nutriment when required; but their great value consists in their producing a sort of fine starch or flour, like the potatoe, or arrow-root, which is called *Tikhur;* and is used as food, in the same manner as the *Maranta arundinacea* in the West Indies, and is prepared by a similar process, supplying the food of whole districts of people. In this respect, all the species of Curcuma seem to be used in the East; although some kinds bear a much larger proportion of these pendulous tubers than others. But independent of the value of this genus in a *medicinal*, *manufacturing*, and *culinary* point of view, it is highly deserving of cultivation, on account of the beauty and elegance of its flowers, which although not diversified in so many beautiful forms as those of *Hedychium* and *Alpinia*, and appearing, to an incurious

observer, to have little variety in the different species, will be found, by a more attentive inquirer, to contain a considerable variety in its flowers, as well in form as colour, so as greatly to assist us in ascertaining the different species.* In this department we also derive further aid by a mode of distinguishing the species which nature has scarcely extended to any other tribe; a variety of colouring in the foliage, which it would scarcely be possible to attribute to any other final cause, than that of contributing to distinguish the species; the leaves being for the most part marked by lines of red, sometimes on the upper side only, at others half way down the mid rib, sometimes towards the base, at others towards the apex, which colours I have found not to change with difference of climate or cultivation; but to form as certain a specific distinction as any other part of the plant. Of this genus I am acquainted with upwards of 20 species, nearly all of which are now growing in the Botanic Garden at Liverpool, and about half of which have been figured in the present work. Besides which, there are several which I have not had an opportunity of figuring, they not having yet produced their flowers with us; amongst which is a most beautiful species with stems and petioles of bright purple, leaves broad lanceolate, with a deep purple cloud down the middle, sent us by Dr. Carey from Serampore.

*I am indebted to Dr. Carey, of Serampore, for furnishing me with native specimens, preserved in spirits, of the flowers of *C. Zerumbet*, *C. Æruginosa*, *C. Rubescens*, and *C. Cæsia*, and also for accurate coloured drawings of the floral bractes of these plants; Dr. Carey being aware that their bright red colour, which form, so essential a part of their character, would be lost during the voyage.

GLOBBA.

The genus *Globba* was erroneously placed by Willdenow in the class *Diandria, (Sp. Pl.* i. 153,) although both by its natural order and systematic arrangement it agrees with Monandria and the tribe of true Scitamineæ, to which it makes a very curious, though not a numerous, addition. This error was rectified by Sir James E. Smith, in his *Exotic Botany,* vol. ii. p. 85.

"The individuals of this family," says Dr. Roxburgh, "are all herbaceous; of rather small size, (their stems and inflorescence together rarely exceed three feet in height,) and perish down to the root about the month of November. Their leaves lanceolar, (tapering equally at each end;) or lanceolate, (tapering from or near the base;) nearly smooth, and tapering into longer and finer points than any other of the order. In all the species here noted, the *inflorescence* is terminal, except in the last, *(Globba saltatoria* of the present work.) The prevailing colour of the flowers yellow; and the *lip* or *wing* of the filament (as in the whole of the order,) the brightest and most ornamental part. The *filament* is particularly long, very slender, and much incurved. Anther double, variously appendaged, or naked. The style uncommonly slender; sometimes it passes along a groove in the inside of the filament to the anther; sometimes it takes a straight, and more direct course, but always passes between its lobes. The *stigma* funnel shaped. The *capsule* oval, generally fleshy and tubercled, one celled, three valved, opening from the apex. *Seeds* many, attached to three parietal receptacles, by the intervention of a thick, spongy, umbilical cord, resembling a small aril." It may also be observed, that in this genus the seeds are frequently supplanted by the introduction of granulated viviparous bulbs, particularly in *Globba marantina.*

Dr. Roxburgh has enumerated six species of Globba, including therein the *Hura siamensium* of Kœnig and Retz, a plant which has long held Exotic Botanists in suspense, and to which he has given the name of *Globba hura.*

CONCLUSION.

Having included in the present collection 112 figures of SCITAMINEAN PLANTS, nearly all drawn from living specimens, being a much greater number than has ever before been given in any one work, I should with great pleasure have continued to render the collection still more perfect, from the plants which are already known to me; but the length of time that may probably elapse before many of those may flower, and my advanced period of life, admonish me to bring the present undertaking to a close, and to rest satisfied with having elucidated this beautiful tribe of plants in a much more satisfactory manner than I had expected, and given many new and splendid plants, of which, when I commenced my work, I had not even an idea.

Besides the Scitaminean Plants here figured, I am acquainted with about fifty other species, the greater number of which are now growing in the Botanic Garden at Liverpool. Of these there are three or four species of Canna, about the same number of Maranta, about ten species of Phrynium, three or four species of Alpinia, about the same number of Costus, and five or six of Curcuma.

Independent of the plants before referred to, I had the pleasure of receiving in the course of the last year (1828,) from my friend Dr. Wallich, Superintendant of the Hon. East India Company's Botanic Garden at Calcutta, an account of a very considerable addition made by him to the number already known of Scitaminean Plants, in his extensive tour through the dominions of the King of Ava, amongst which he has particularly enumerated the following plants, viz. *Phrynium macrostachyum, Hedychium barbatum and Javoyanum; Kæmpferia Craufurdia, Roscoeana, parviflora, and candida; Gastrochylus* (G. nov. limbo duplici Kæmpferiæ, anthera Alpiniæ) *longiflora, et pulcherrima; Curcuma attenuata, Roscoeana, glaucophylla, cordifolia, grandiflora, parviflora, plicata, strobilina; Amomum corynostachyum; Zingiber barbatum; Costus argyrophyllus; Globba bracteolata and expansa,* all of these being *species novissimæ.* These newly discovered plants being added to those figured in the present work, and to those with which I was before acquainted, but which I have not, from various causes, been enabled to delineate and describe, would amount to upwards of 180 species; so that upon the whole it is probable there are not less than 200 Scitaminean Plants, or upwards, now known, whilst the number described by me in my new arrangement of Scitaminean Plants, published in the year 1807, in the 8th volume of the Transactions of the Linnæan Society, amount only to about 50 plants, few of which had at that time been accurately figured.

The regret which I feel in thus discontinuing my pleasing occupation, whilst so large a portion of plants yet remains to be figured, is however greatly diminished by the consideration, that even under the most favourable circumstances, considering the slow and reluctant manner in which many of these plants produce their flowers, I could not be expected to render this a perfect work; and still more so by the reflection that a considerable progress will shortly be made in carrying this undertaking nearer to perfection, by a publication lately announced by Dr. Wallich, who has visited this kingdom with the result of his immense collections for various years past through the provinces of Hindostan, Nipal, the Straits of Malacca, and lastly in the Burmese territory, from which he has been enabled to bring with him upwards of 1200 drawings, and to obtain 8000 species or more, of plants from those countries, the majority quite new. From these Dr. Wallich has proposed to publish, in the first instance, a select number of East India plants, in three vols. folio, under the title of PLANTÆ ASIATICÆ RARIORES, each volume to consist of 100 plants, to be engraved and coloured

from drawings made by native artists. This work will be published under the munificent patronage of the Honorable East India Company, by whose continued and liberal support and assistance Dr. Wallich has been enabled not only to form the extensive collection of plants which he has lately brought into this country, but to lay a selection of them before the British public in a manner suitable to their importance. The work will be comprised in twelve numbers, each containing 25 plates, to appear every three months, making in the whole three volumes, of 100 figures each.

In this work, it may be expected that Dr. Wallich will make a considerable addition to the number of Scitaminean Plants already known, to the study of which he has long been particularly attached; and that these, with the additional numbers now publishing in the many other excellent Botanical publications of this country, will shortly carry this beautiful and interesting portion of the science to a degree of perfection which may set an example to other persons to follow it, through the succeeding classes of the vegetable kingdom.

Before I dismiss the present work I think it necessary to state, that it was not until after I had written and printed my lines of introduction to it, that I was apprised of the intention of Mr. Lindley, the present Professor of Botany in the University of London, to publish a new work entitled a *Synopsis of the British Flora*, arranged according to the natural orders; in the preface to which (as appears from *Loudon's Magazine of Natural History*, for May 1829) are the following remarks: "All the British Floras, with the exception of the Flora Scotica of Dr. Hooker, have been arranged upon the principles of a system which, whatever popularity it may, *from particular circumstances*, have acquired, and however useful it may be found in communicating a knowledge of the names of things, does certainly not now tend to the advancement of science, or to an accurate knowledge of things themselves. Of course I allude to the system of Linnæus, a system which has *almost disappeared from every country but our own, and which now ought to find no other place in science than among the records of things whose fame has passed away.*" On this occasion I find it incumbent on me to declare, that in this unqualified condemnation of the Linnæan system, the principles of which are adopted in the present volume, I can by no means agree, being convinced that such system will remain, as being established on the sure foundation of the sexual distinctions, whatever may be the fate of that of Jussieu; which may be cultivated as a separate science by those who have time and ability for the purpose, but which can never supersede the more *attainable, concise*, and *certain* arrangement of the illustrious Swede. Indeed the learned Professor has himself acknowledged that, "after all that has been effected in the present case, or is likely to be accomplished hereafter, there will always be more difficulty in acquiring a knowledge of the Natural system of Botany than of the Linnæan." I shall not however enter further into the subject at present than to inform the reader, who may be desirous of obtaining further information respecting the *Natural*, or rather the French system, that he will find it in an article by the late Sir J. E. Smith, President of the Linnæan Society, in the second volume of the Supplement to the *Encyclopedia Britannica*, under the Title "BOTANY, *with a particular reference to the systems of Linnæus and Jussieu;*" and also in a paper in the eleventh volume of the *Transactions of the Linnæan Society*, p. 50, "*on artificial and natural arrangements of Plants*," for which I am myself accountable.

CANNA INDICA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds globose, numerous.

SPEC. CHAR.—Spike erect; upper lip of the interior limb of corolla in three sections; sections linear, erect, equal, converging, intire, acute; lower lip intire, declined; leaves lanceolate, inæquilateral.

SYN.—*Canna Indica*, corollæ limbo interiore trifido, laciniis lanceolatis, acuminatis, strictis. *Roemer & Schultes*, vol. i.

Canna Indica, var. rubra. flore toto rubescente, foliis elliptico-ovatis. *Aiton, Hort. Kew.* tom. i. p. 1. Ed. i.

Canna Indica, corollæ limbo interiore trifido, laciniis lanceolatis, acuminatis, strictis. *Aiton, Hort. Kew.* tom. i. p. 1. Ed. ii.

Canna Indica, *Bot. Reg.* No. 776.

Canna Indica, *var. maculata.* Indian shot; spotted flowered variety. *Hooker, Exotic Flora. 53.*

DESCRIPTION.

Root fibrous; stem erect, 3–4 feet high; leaves lanceolate, inæquilateral; petioles short, winged, decurrent; general bracte long-lanceolate, deciduous; partial bracte irregularly ovate or wedge-shaped, membranous, deciduous, inclosing one or two flowers; spike erect; rachis angular; calyx superior, persistent, in three nearly equal segments, lanceolate, acute; corolla monopetalous, with a double limb or border; outer limb in three segments, long, linear, acute, intire, equal, converging; inner limb bilabiate; upper lip in three sections, linear-lanceolate, acute, intire, converging; lower lip spatulate, intire, declined; filament petal-like, erect, intire, acute; anther simple, linear, affixed to the margin of the filament, but supported also by a proper stamen concealed and decurrent in the margin; style petal-like, intire, acute; stigma an obtuse scale; capsule globose, rugose, 3–4 celled; seeds black, numerous.

OBSERVATIONS.

The Canna Indica has long been known in this country. It is mentioned by Miller, in his Gardener's Dictionary, as being a native of the warmest parts of America. Its specific appellation is probably therefore not derived from the East, but the West Indies; where it is also called *Indian reed*, and the seeds *Indian shot.* By our earlier botanists, it was called *Flos-Cancri*, or *Crabs-claws*, from the resemblance between the erect, linear, converging, bright-red flowers, and the claws of a crab; a resemblance which is characteristic of this species only. Thus Cowley, in his Fourth Book of Plants, says,

" The INDIAN Flow'ry Reed in figure vies,
" And lustre, with the *Cancer* of the skies."

The *Canna Indica* of Dr. Roxburgh, (*Asiat. Res.* vol. xi. p. 322, and *Flor. Ind.* vol. i. p. 1.) with its yellow variety, which are common in the gardens throughout India, is a different species from the present, and will be given under the name of *C. orientalis.*

The figure in Bot. Register, No. 776, is very characteristic; but the *Canna Indica* of Redouté, fig. 201, is a different plant from the present, having only two sections of the upper lip of the interior limb of the corolla. It is supposed by Dr. Hooker to correspond with *C. speciosa* of Dr. Sims. Bot. Mag. 2317.

REFERENCES.

1. The three segments of the upper lip of the corolla.
2. Filament, anther, and style.
3. Lower lip of corolla.
4. Outer limb of corolla.
5. Germen and calyx.

Canna Lamberti

CANNA LAMBERTI.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse terminal scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike erect; upper lip of interior limb of corolla in three segments; segments ovate, unequal, intire; lower lip lanceolate, intire, revolute; leaves broad-lanceolate.

SYN.—Canna Lamberti. *Bot. Reg.* 470.

Canna maxima. *Loddiges, Cab.*

DESCRIPTION.

Root fibrous; stems erect, from 12 to 14 feet high; leaves broad-lanceolate, inæquilateral; floral bractes deciduous; calyx of three lanceolate leaves, purpurescent; outer limb of corolla in three lanceolate segments, nearly equal, erect, acute; inner limb in three segments; segments broad, ovate, intire at the apex, unequal, the middle one being the smallest, and sometimes wanting; lower lip smaller than either of the two larger sections of the upper lip, linear-lanceolate, intire, revolute; filament lanceolate, intire, revolute; anther attached to the margin, near the apex; style erect, linear-lanceolate, acute; the whole corolla of a uniform, fine deep scarlet; capsule ovate, rugose; seeds numerous.

OBSERVATIONS.

This fine plant "was raised by Mr. Lambert, from seed collected in the island of Trinidad, and flowered at Boyton House, in May 1820, for the first time in England." On its first appearance it was supposed to be the *Canna Indica* of Ruiz and Pavon, *Flor. Peruv.* i. 1. and was referred to that species in *Bot. Reg.* 470, where a figure of it was first published; but this error has since been corrected in the same work, and the Peruvian plant more accurately referred to *Canna edulis. Bot. Reg.* 775; and *Note on C. Lamberti, in the appendix to vol.* vi. *ib.*

Our drawing of the present plant was taken from a specimen of the flowers, leaves and capsule, obligingly sent us by Messrs. Loddiges of Hackney, the plant in the Botanic Garden at Liverpool not having yet flowered. As an ornamental plant, it is not perhaps exceeded by any species in the genus, except the *Iridiflora*, which was also introduced into this country by Mr. Lambert.

REFERENCES.

1. Germen and calyx.
2. Outer limb of corolla.
3. The three segments of the upper lip of the inner limb of corolla.
4. Filament and anther.
5. Lower lip of corolla.
6. Capsule with the permanent calyx.

Canna Patens

CANNA PATENS.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style erect, club-shaped, intire; stigma a terminal obtuse scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Corolla monopetala, upper lip of the interior limb of the corolla in three sections, equal, ovate, intire, expanding; lower lip linear, revolute, bifid, spotted; leaves lanceolate; capsule ovate, rugose.

SYN.—Canna Indica, *var.* Patens (δ) *Aiton, Hort. Kew. Ed.* 1.

Canna Patens. *Aiton, Hort. Kew.* vol. i. p. 1. *Ed.* 2.

Canna Indica. *Curt. Bot. Mag.* vol. xiii. No. 454.

Canna Patens. *Bot. Reg.* vol. vii. No. 576.

Canna Patens. *Roemer & Schultes,* No. 5.

DESCRIPTION.

Root tuberous; stem from four to five feet high, jointed; leaves lanceolate, subequilateral; petiole short, winged, sheathing the stem; spike loose, many-flowered, rising from a general bracte or sheath; proper bracte short, cuneate, membranous, deciduous; calyx of three short, equal, lanceolate segments, pale green; exterior limb of the corolla in three segments, equal, lanceolate, yellow, terminating in green; upper lip of the interior limb in three segments, intire, ovate, spreading, deep red; lip linear, revolute, emarginate, or slightly notched, yellow, with oblong red spots; filament shorter than the other sections of the corolla, slightly revolute, spotted; anther attached to the margin of the filament, near the apex; style erect, club-shaped, stigma a terminal scale; capsule three-celled, large, oblong, rugose; seeds numerous, black when ripe.

OBSERVATIONS.

This plant, first introduced to notice in the first edition of the Hort. Kewensis, as a variety of the *Canna Indica,* has been ascertained, by the growth of many years in the Botanic Garden at Liverpool, to be a distinct species, maintaining its peculiar character amidst the great diversity of other plants of the same genus, by which it is there surrounded.

The character given in the *Hort. Kewensis,* "Corollæ limbo *interiore* trifido, laciniis reflexis," seems to have induced Willdenow, in his *Enumeratio,* vol. i. p. 2. to refer to this plant as his *C. chinensis,* from which it is entirely distinct; as in that plant it is not the segments of the *interior,* but of the *exterior* limb that are reflected. "*Corollæ laciniis exterioribus demum reflexis,*" whence it appears, that the *C. chinensis* of Willdenow is the *C. Indica* of *Roxb. Flora Indica,* vol. i. p. 1. figured in the present work as *C. orientalis,* the true *C. indica* being undoubtedly an American plant.

Seeds of the Canna Patens have been received from the Island of St. Helena, where it is probably indigenous.

REFERENCES.

1. Germen and calyx.
2. Exterior limb of corolla.
3. Lip.
4. Filament, anther, style and stigma.
5. The three segments of interior limb.
6. Seed-vessels.
7. Unripe seeds.

1.

4.

3.

2.

Canna latifolia.

CANNA LATIFOLIA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Upper lip of the interior limb of the corolla in three sections, intire, acute, irregularly spreading; lower lip spatulate, slightly lobed; style petal-like; leaves broad, ovate; stem woolly.

SYN.—Canna gigantea. Woolly-stemmed Indian shot. *Bot. Reg. t.* 206.

Canna gigantea. *Redouté Liliac.* 331.

Canna gigantea. *Bot. Mag.* 2316.

Canna gigantea. *Roemer & Schultes, Sys. Veg.* vol. i. p. 12.

DESCRIPTION.

Root tuberous; stem from 10 to 15 feet high, woolly, frequently two inches in diameter at the base; leaves alternate, broad-ovate; lobes equilateral, strongly ribbed, from three to four feet long by one foot broad; petioles and sheathing covered with a dense down or nap; common bracte large, coriaceous; proper bracte membranous, deciduous; spike many-flowered; calyx in three lanceolate segments; outer limb of the corolla in three long, lanceolate, erect segments, yellow terminated with deep red; interior limb long, tubular, extending beyond and diverging obliquely from the exterior limb; segments linear-lanceolate, irregularly spreading, frequently lobate, or slightly mucronate at the apex, deep red; lower lip nearly resembling the upper sections, linear-lanceolate, slightly declined, emarginate or lobed at the apex, deep red; filament petal-like, revolute; anther grooved, attached to the margin; style coloured like one of the sections of the corolla, all of which are of a bright uniform red; stigma an obscure scale; capsule large, rugose, three-valved; seeds many, globose, black.

OBSERVATIONS.

This magnificent species of Canna was first received at the Botanic Garden in Liverpool, in 1810, from the Duke of Northumberland's, at Sion House, under the name of *Canna latifolia.* On its first flowering there, it was erroneously supposed to be the *patens* of the *Hort. Kewensis,* Ed. 1, and was so stated by me, in *Trans. Lin. Soc.* vol. xi. p. 272, a mistake which I have since been afforded an opportunity of correcting in the Bot. Register, vol. ix. *v. Note, in fine,* where the specific appellation as first adopted is restored, and a correct character may be found. In fact, no species in the whole genus is more strongly characterized than the present. Such is the close resemblance of the different parts of the interior limb of the corolla, including the filament and style, to each other, as well in form as colour, that by an incurious observer they might be mistaken for an hexapetalous flower; whilst the irregularly diverging form of their growth displays a wild elegance wholly unlike any other species.

REFERENCES.

1. Entire flower.
2. Capsule.
3. Ditto opened.
4. Seeds.

Canna edulis

CANNA EDULIS.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

Gen. Char.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous.

Spec. Char.—Spike erect; upper limb of corolla in three segments; segments lanceolate, intire, nearly equal, erect, converging; lower lip narrow, linear, bifid at the apex, declined; pedicels winged; leaves broad-lanceolate, acute, subæquilateral.

Syn.—*Meeru*, sive *Canna Indica. Piso. Hist. Nat. Brazil*, p. 116. Marcgr. *Ibid.* p. 4.

Canna Indica. *Ruiz & Pavon, Flor. Peruv.* i. 1. *Bot. Reg.* 775.

Canna edulis. Tuberous rooted Indian reed. *Bot. Mag.* 2498.

DESCRIPTION.

Roots large, tuberous, with many germinating eyes or buds, perennial; stems erect, round, jointed, from 8 to 12 feet high, purpurescent, with a slight scattered down or hair; leaves very large, broad-lanceolate-acute, strongly nerved; lower leaves on long petioles, upper ones sheathing the stem; petioles winged, decurrent, deeply channelled, downy; general bracte lanceolate, acute, green, with a purple margin; floral bracte common to two flowers, broad-ovate, dull red, with a pallid membranous crenate margin, deciduous; one of the two pedicels winged immediately below the germen, with two unequal petal-like coloured processes; calyx of three leaves, erect, acute, equal, deep crimson; outer limb of the corolla in three segments, lanceolate, dark crimson; inner limb with a double lip, upper lip in three segments, two of them rather larger, lanceolate, intire, with long yellow claws, one of the sections frequently declined; lower lip rather less than the upper segments, linear, bifid at the apex, deflexed; filament smaller than the segments of the corolla; style erect, linear, pallid; stigma a scale; germen angular, rugose, with three cells; seeds numerous.

OBSERVATIONS.

From the duplicate figures and descriptions given by Piso and Marcgrave, of the *Meeru* of Brazil, and particularly from the large tuberous esculent roots, we have little doubt that this is the same species as that figured and described by them, and for a still earlier account of which, they have referred to *Clusius, lib.* 4. *cap.* 54. That it is also the *Canna Indica* of the *Flora Peruviana*, we are assured by the Editor of *Bot. Reg.* No. 775, who has also corrected an error in the last mentioned work, No. 470, where the Peruvian plant is referred to *Canna Lamberti.* We have observed some diversities between the plant here published, and that figured in *Bot. Reg.* and particularly that the segments of the inner limb of the corolla are there represented as slightly emarginate, whilst in ours, drawn from a fine fresh specimen, those segments were acute and intire, as is also the case with the figure in *Bot. Mag.* No. 2498. On the other hand, we find in the last mentioned figure, the lower lip or labellum represented as intire and acute, whilst in that in *Bot. Reg.* it is emarginate or notched, as was the case also in our specimen. Some other slight variations may also appear on comparison of the figures now published; but upon the whole, there can be no doubt of the identity of the species, which was raised by Mr. Lambert, from seeds collected by the authors of the *Flora Peruviana*, nearly thirty years before they were committed to the ground. The two small petaliform coloured appendages on the pedicels, a little below the germen, are not found, as far as our observations extend, in any other plant of the genus, and alone sufficiently distinguish the species.

The plant from which the present figure is given, was obligingly communicated by Richard Harrison, Esq. from his Conservatory, at Aighburgh, near Liverpool. It was raised from Brazilian seeds, and is now upwards of ten feet high.

REFERENCES.

1. Outer limb of corolla.
2. Pedicel, with its winged appendages, germen and calyx.
3. Floral bracte, with two flowers, calyx, style and stigma.
4. Lower lip.
5. Filament, anther and style, in position.
6. Segments of upper lip of corolla.

Canna flaccida

CANNA FLACCIDA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

Gen. Char.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma obtuse; capsule three-celled; seeds numerous.

Spec. Char.—Corolla monopetala with a double limb; inner limb bilabiate; upper lip in three sections, emarginate, ovate, crenate, flaccid; lower lip broad, crenate, flaccid; outer limb in three sections, reflexed.

Syn.—Canna flaccida. Dill. Hort. Eltham. tab. 59, fig. 69.

Canna flaccida. Redouté Liliac. tab. 107.

DESCRIPTION.

Roots tuberous, subaquatic, fleshy, spreading to a distance; *stem* 4–5 feet high, smooth; *leaves* alternate, decurrent, broad lanceolate, equilateral, intire, smooth, converging, 1–2 feet long; *spike* few-flowered; *flowers* large, expanding; *corolla*, *upper lip* of the inner limb in three segments; *segments* ovate, crenate, flaccid, pale yellow, or sulphur colour; *lower* lip very broad, crenate or undulate, flaccid; *outer limb* in three lanceolate, acute, reflexed, straw-coloured segments; *calyx* three lanceolate leaflets, green; *bractes* common, large and coriaceous; *filament* petal-like, ovate-elliptic, crenate; *anther* long, grooved, attached to the incrassated margin of the filament; *style* elliptic, obtuse; *stigma* a terminal scale; *capsule* oblong-ovate, rugose, large; *seeds* numerous, black.

OBSERVATIONS.

A native of America, where, Mr. Nuttall informs me, he saw it growing in great quantities on the banks of the Mississippi. Has been cultivated in our gardens many years.

REFERENCES.

1. The three segments of upper lip of Corolla.
2. Lower lip of Corolla.
3. The three segments of the outer limb of Corolla.
4. Filament and anther.
5. Style and stigma.
6. Germen and calyx.

Canna glauca.

CANNA GLAUCA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse terminal scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike erect; upper lip of interior limb of corolla in three segments; segments ovate, equal, intire; lower lip long, linear, notched at the apex, revolute; leaves lanceolate, long, glaucous.

SYN.—Canna glauca. *Linn. Sp. Pl.* 1.

Canna glauca. *Sir J. E. Smith, Exot. Bot.* vol. ii. tab. 102.

Canna glauca. *Hegetschweiler, Comment. Bot.* tab. ii. fig. 9.

DESCRIPTION.

Root perennial, fibrous, creeping; stem erect, six feet high; leaves long-lanceolate, inæquilateral, strongly veined, glaucous, decurrent and sheathing the stem; spike terminal, generally with three or more flowers bursting from a long sheathing bracte, and closely sitting on a triangular rachis; each flower supported at the base by a proper, wedge-shaped, floral bracte, light brown, deciduous; calyx of three lanceolate leaves, of a glaucous green, permanent; corolla with a double limb; outer limb in three lanceolate-acute segments; inner limb with a double lip; upper lip in three segments, equal, broad-ovate, intire; lower lip long, linear, revolute, bifid at the apex; filament lanceolate, revolute, bearing on the margin near the apex a long, slender anther; style erect, linear-lanceolate; stigma obtuse; the whole flower of a uniform, fine, pale yellow, or sulphur-colour; capsule large, verrucose, ovate, three-celled, with numerous hard, globular seeds.

OBSERVATIONS.

This plant is probably a native of Africa, from whence Linnæus informs us he received the seeds of it. That it is the same plant as described by him under the name of *Canna glauca*, appears from the specimens and description in his Herbarium, v. *Sir J. E. Smith, Exot. Bot.* vol. ii. p. 83. Willdenow confounded it with the *C. flaccida*, a very different plant, and referred it to the figure in *Dill. Hort. Elth.* t. 59, f. 69. v. *Willd. Syst.* v. i. p. 4. *Enum. Berol.* i. 3. into which mistake he was probably led by the *Hort. Kew.* 1st edition, p. 2. where it is stated to have been cultivated by Sherard, in 1732; an assertion which must be understood of the *C. flaccida.*

The figure of Hegetschweiler differs considerably from both the specimen in *Exot. Bot.* and that here given; particularly in one of the upper segments of the interior limb of the corolla being deeply emarginate. It is not however improbable, that variations of this nature may occasionally occur, as well in this tribe of plants as others. Fortunately, however, the present species is so strongly characterized in other respects, that it is impossible it should be mistaken for any other of the genus. It is best cultivated by placing the roots in water, where it is a great ornament to the aquarium.

We must not omit to notice, that we have received specimens of the flowers and fruit in spirits, from the tropical parts of America, and that our drawing of the capsule is from one of foreign growth.

REFERENCES.

1. Floral bracte.
2. Germen and calyx.
3. Sections of outer limb of corolla.
4. Segments of upper lip of inner limb of corolla.
5. Filament, anther, style and stigma.
6. Capsule.
7. Ditto opened.

Canna pedunculata.

CANNA PEDUNCULATA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

Gen. Char.—Anther single, attached to the margin of the petal-like filament; style club-shaped; stigma an obtuse scale.

Spec. Char.—Corolla monopetala, with a double limb; inner limb bilabiate; upper lip in three sections; sections emarginate, erect; lower lip revolute, bifid; outer limb of corolla reflexed; flowers in pairs on long peduncles.

Syn.—Canna pedunculata. Loddiges Bot. Cabinet, fig. 622.

Long-peduncled Canna.

DESCRIPTION.

Roots tuberous, stoloniferous; stoles as thick as a man's finger; stems 5–6 feet high; leaves alternate, lanceolate, decurrent, from one to two feet long; inæquilateral, smooth, nerves distant; flower-spike 6–8 inches long, angular; flowers in pairs on long round peduncles; outer bracte common to both flowers, with an inner bracte to the secondary flower; upper lip of the inner limb of the corolla in three segments, frequently luxuriating into four, notched, erect; claws short; lower lip revolute, deeply notched; outer limb of three lanceolate reflexed tortuose segments, yellowish green; filament revolute at the apex, slightly notched; style erect, spatulate; stigma obtuse; calyx triphyllous, leaflets short, lanceolate, slightly emarginate, light green, farinaceous; germen pale green, rugose, slightly triangular; seeds numerous, ovately globular, black.

OBSERVATIONS.

A very distinct species; *sufficiently* characterized from all the rest of the genus now known, by its long peduncles.

The present Plant, which is supposed to be a native of the *Brazils*, was sent to the Liverpool Botanic Garden by Mr. Cooper, Botanic Gardener to Lord Milton, at Wentworth House, and flowered in April, 1823.

REFERENCES.

1. Corolla.
2. Peduncles, germen and calyx.
3. Outer bracte.
4. Inner bracte.
5. The three segments of the upper lip of the inner limb and corolla.
6. Filament and anther, style and stigma.
7. Lower lip of the corolla.
8. Outer limb of the corolla.
9. Filament and style before the flower expands.
10. Seeds.

Canna limbata

CANNA LIMBATA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Upper lip of interior limb of corolla tripartite; segments emarginate, subæqual, crenate, bright scarlet, bordered on the margin with orange; lower lip narrow, linear, bifid, declined; leaves lanceolate-acute, sea-green, sessile, decurrent.

SYN.—Canna auro-vittata. *Loddiges, Bot. Cab.*

Canna limbata. *Bot. Reg.* 971.

DESCRIPTION.

Roots tuberous, spreading and sending up numerous suckers; stem from four to six feet high, smooth; leaves alternate, lanceolate-acute, inæquilateral, with decurrent sheaths; spike loose, erect; common bracte large, coriaceous, glaucous, with a slight purple tinge; calyx of three short, unequal, lanceolate segments, pale green; exterior border of corolla in three long lanceolate segments, pale yellow; upper lip of interior limb in three segments; segments lanceolate-obtuse, nearly equal, bright scarlet, margins crenate, and bordered with orange; lip narrower than the upper segments, bifid and spotted with red, declined; anther oblong, adhering to the filament, near the apex; style spatulate; stigma an obtuse scale; capsule globular, verrucose, three-celled; seeds black when ripe.

OBSERVATIONS.

The seeds of this species were sent to the Botanic Garden in Liverpool, by Mr. Otto, from Berlin, under the name of *Canna Patens*, to which it certainly nearly approaches, and perhaps may be considered as a variety only; although it has been constant in its habits, as well in the Botanic Garden as in several other Conservatories in the neighbourhood of Liverpool. It is said to be a native of the Brazils.

REFERENCES.

1. The three upper segments of the interior limb of corolla.
2. Filament and anther, style and stigma.
3. Lower lip.
4. Outer limb of corolla.
5. Germen and calyx.
6. Capsule.
7. Ditto opened, showing the unripe seeds.

Canna sylvestris.

CANNA SYLVESTRIS.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Upper lip of interior limb of corolla tripartite; segments emarginate, subæqual, obtuse, converging; lower lip linear, bifid, declined; leaves lanceolate, æquilateral.

DESCRIPTION.

Roots tuberous, stoloniferous; stem herbaceous, simple, 4–5 feet high, covered with a deciduous down; leaves alternate, lanceolate, 1–2 feet long, by 6–8 inches broad, not so strongly ribbed as in most other species, but of a more coriaceous substance; petioles from three to four inches long, channelled; spike terminal, flowers dichotomous, with a long bracte to each flower, of a glaucous colour; interior bracte wedge-shaped, membranaceous; calyx of three lanceolate segments, purpurescent; outer limb of corolla in three lanceolate segments, nearly equal, crimson; inner limb with a double lip; upper lip in three segments, long, linear, of nearly equal size, obtuse and irregularly emarginate at the apex, converging, and somewhat hooded over the parts of fructification, giving the appearance of a ringent flower; lower lip long, linear, obtuse and bifid at the apex; filament lanceolate, cartilaginous at the margin; anther rather small; style short, spatulate; stigma a scale; the whole interior limb of corolla a bright scarlet; germen verrucose, tubercles purple.

OBSERVATIONS.

An hitherto undescribed and very distinct species, of a peculiarly elegant appearance; its fine crimson flowers being a great ornament to the Conservatory. It is probably a native of the tropical climates of America, but was first received at Liverpool in the year 1813, from the Botanic Garden at Dublin, under the name of *Amomum Sylvestris*, the specific name of which we have retained. A plant of the same species was afterwards received from Mr. Loddiges, at Hackney, under the name of *Canna Patens*.

REFERENCES.

1. The three sections of the upper lip of corolla.
2. Filament and anther, style and stigma.
3. Lower lip.
4. Outer limb of corolla.
5. Parts of fructification, as they appear before the flower expands.
6. Germen and calyx.

Canna coccinea

CANNA COCCINEA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; seeds globose, numerous.

SPEC. CHAR.—Upper lip of interior limb of corolla erect, in three sections, one smaller, sections emarginate, lower lip bifid, yellow, with streaks of red.

SYN.—Canna coccinea. *Aiton Hort. Kew*, p. 1. *Ed. 2.*

Canna Indica, var. (γ) coccinea. *Willd. Spec. Pl.* vol. i. p. 3. Canna rubra (Indica (γ) coccinea.) *Willd. Enum. Pl. Berol.* vol. i. p. 2.

Canna speciosa, major. *Hegetschweiler, Com. Bot. tab.* 1. *fig.* 7. *B.* The flower only.

Canna coccinea. *Roemer & Schultes*, vol. i. p. 11.

DESCRIPTION.

Root tuberous; stem from four to six feet high; leaves alternate, ovate-lanceolate, undulate and membranous at the margin; sheaths of the petioles slightly downy; calyx of three lanceolate segments, pale red; outer limb of corolla of three linear-lanceolate segments, erect, flesh colour; upper lip of the inner limb of the corolla of three erect, unequal segments, the middle one being generally the smallest, and sometimes wanting; sections emarginate, with a deep irregular division; colour bright scarlet, lower lip narrow, linear, reflexed, bifid at the apex, yellow, with longitudinal scarlet spots; filament small, linear, intire, declined, deep yellow or orange colour, with red lines, anther long-linear, grooved, adhering to the margin near the summit; style erect, spatulate, stigma a white scale.

OBSERVATIONS.

This elegant species of Canna has long been introduced into this country, having been described in the first edition of the Gardener's Dictionary by Philip Miller, by whom it was cultivated in 1731. That it is a native of America there can be no doubt.

Willdenow has remarked, that one of the segments of the corolla is sometimes wanting; but observes, that in this case the rudiment of the segment may generally be found in its place. He distinguishes this species into two varieties, one with a compressed, the other with a trigonous rachis, but I have not met with such distinction. He also observes, that the lower lip is sometimes found entirely scarlet, a variation which seems much more likely to occur than the former.

On examining the flower of C. coccinea about three days before it expands, the anther appears intire, resembling a grain of wheat, but more oblong, and the style in contact with it. In examining it again, the day before expansion, the anther appears burst, and the pollen adhering to the style. The pollen is white, and almost as large as a poppy seed. When the flowers open, the anther is shrivelled and effete.

REFERENCES.

1. The three segments of the upper lip of corolla.
2. Filament, anther, style and stigma.
3. Lower lip.
4. Outer limb of corolla.
5. Germen and calyx.

6 & 7. Filament, anther, style and stigma, as they appear before the flower expands.

Canna Orientalis.

CANNA ORIENTALIS.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Upper lip of the interior limb of corolla in three sections; sections lanceolate, erect, unequal, bidentate at the apex; lower lip bifid; outer limb of corolla reflexed; leaves broad-lanceolate; flowers deep red.

SYN.—Katu-bala. *Rheed. Hort. Mal. vol.* xi. *p.* 85. *tab.* 43.

Cannacorus. *Rumph. Hort. Amb. vol.* v. *p.* 177. *tab.* 71. *fig.* 2.

Sabbajayá, Sarvajayá. *Hind. Colebrooke* in *Asiat. Res. vol.* xi. *p. 322.*

Sarbajayá. The red variety, Lal sarbajayá. *Bengal, ibid.*

Catubalá, Rána céli. *Malab. ibid.*

Danch-tasbih. *Malay. ibid.*

Canna indica. Leaves ovate-lanceolate; segments of the inner border of the corolla lanceolate and bidentate. *Roxb. Asiat. Res. vol.* xi. *p. 322. Flor. Ind.* i. *p.* 1.

Lal Surva-juya, the red variety. *Ibid.*

Canna Chinensis, calycis foliolis lanceolatis, acutis, corolla sexpartita, laciniis exterioribus demum reflexis; foliis ovato-oblongis, utrinque acutis, costatis. *Willd. Enum. Berol.* tom. i. p. 2.

DESCRIPTION.

Root tuberous with many fibres; stems four feet high; leaves alternate, broad-ovate-lanceolate; petioles caniculated, winged, decurrent; spike erect; flowers rising from a long green sheath or general bracte; partial bracte small, cuneate, membranous, deciduous; calyx superior, persistent, in three equal, lanceolate, acute segments; outer limb of the corolla in three nearly equal, lanceolate, acute segments, one or more of them generally reflexed, dull red; upper lip of the interior limb in three segments, lanceolate, unequal, emarginate, or bidentate at the apex, bright red; lower lip linear, revolute, bifid, or notched at the apex, yellow with red streaks; filament smaller than the sections of the corolla, linear, reflexed; anther simple, long, linear, affixed to the margin of the filament; style erect, spatulate, obtuse; stigma a scale; capsule rugose, seeds numerous, black.

OBSERVATIONS.

This is the *Canna* of the East Indies, and together with its yellow variety, is, according to Dr. Roxburgh, the only species known in that country. *v. Asiat. Res. vol.* xi. *p. 322. Flor. Ind. vol.* i. *p.* 1. A much finer species has, however, since been discovered in *Nipal,* which will be found in this work, under the name of *Canna speciosa.*

That the *Canna indica* of the East is a very different plant from the *Canna indica* of the western world is now ascertained beyond a doubt; and that the latter is the plant known in Europe under that name, may appear from what has been stated in the description of it in the present work. Rumphius also observes, that the plant cultivated in Europe, is said to have been raised from seed brought from the *West Indies.* "In Europam dicitur hanc plantam fuisse deductam, per semen ex *Indiis occidentalibus.*" *Hort. Amb. vol.* v. *p.* 177. That these plants have hitherto been considered as the same species, must, however, be allowed; and the figures and descriptions of Piso and Marcgrave, of Van Rheede and Rumphius, of Linnæus and Dillenius, of Thunberg and of Sabbati, have been promiscuously referred to, although the plants they describe are essentially and specifically distinct from each other. Even in the last edition of Linnæus, by Willdenow, we find it stated that the *Canna indica,* "habitat inter tropicos Asiæ Africæ et Americæ;" and in the *Hort. Kewensis,* it is said that it is a native of *both Indies.* Nor does it appear that any doubt as to the identity of the eastern and western species, has hitherto been entertained.

The principal distinctions between the *Canna* of America, so long known in Europe by the name of *Canna indica*, and that of the East Indies, here denominated *Canna orientalis*, consist in the segments of the upper lip of the interior limb of the corolla, which, in the Canna indica, are intire and pointed, but in the *Canna orientalis* are bidentate, or notched. This is also the case in the lower lip, which affords a much more striking distinction, as there are scarcely any other species of *Canna* than the true *indica*, in which the lip is found *intire*.— The leaves of *Canna orientalis* are also considerably broader than those of *Canna indica*, and the habit of the plants, when compared together in a living state, exhibit such a striking difference as immediately to distinguish them, not only as different species, but as each of them included under a different section of the plants of this genus, as regards their general habit; one of which would include the kindred species of *Canna indica, patens*, and *limbata*, the other *Canna orientalis, coccinea, pallida*, and *lutea*.

This plant *(the Canna orientalis)* seems to have been well known to Willdenow, who cultivated it in the Royal Garden at Berlin, and has accurately described it in his *Enumeratio* of the Plants growing there, under the name of *Canna chinensis, (vol.* i. *p.* 2.)—He is, however, mistaken in referring it to the *Canna indica*, (δ.) var. patens of *Aiton, Hort. Kew. vol.* i. *p.* 1. to which he seems to have been led by the reflexed segments of the corolla; not, perhaps, having observed that in his *Canna chinensis*, it is the segments of the *exterior* limb, in the *patens*, those of the *interior* limb, that are reflexed. The *Canna patens* of Aiton must, therefore, be excluded as a synonim for this plant; the very general dispersion of which through the East has induced us to adopt the present appellation, in preference to the more local one of *Chinensis*, even on the authority of Willdenow himself; "habitat *in India orientali.*" *Enum. Berol. vol.* i. *p.* 2.

The mistake of Willdenow, in citing the *Canna patens* as a synonim for his *Canna chinensis*, seems to have been followed by Roemer and Schultes, who, in their last edition of Linnæus, have cited the *Canna chinensis* of Willdenow as their *Canna patens;* although it is wholly different in those characters on which the species of this numerous genus principally depend; in particular, the segments of the interior limb in the *patens* are intire, in the *chinensis* they are cloven or notched; in the *patens* it is only the sections of the *inner* limb of the corolla that are reflexed, or rather slightly revolute; in the *chinensis* it is the sections of the outer limb that are reflexed, or bent directly backwards; a circumstance which does not, however, always occur in the young flowers, and which justifies the cautious expression of Willdenow, "laciniis exterioribus *demum* reflexis."

The peculiarities adverted to in the *Canna orientalis*, are sufficiently shewn in the figure of the flower in the Hort. Mal. of Van Rheede, of which the following is a copy:—

a. Segment of the upper lip of interior limb of the corolla.

b. Lower lip of corolla.

c. Segment of exterior limb of corolla, reflexed.

REFERENCES.

1. Sections of upper lip of interior limb of corolla.
2. Filament and anther, style and stigma.
3. Lip.
4. Exterior limb of corolla.
5. Germen and calyx.
6. Filament, anther, style, and stigma, before the flower unfolds.

Cannas Orientales
var flava?

CANNA ORIENTALIS. VAR. FLAVA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obscure scale; capsule three-celled, seeds numerous, globular.

SPEC. CHAR.—Upper lip of the interior limb in three sections; sections bidentate, lower lip bifid; outer limb of corolla reflexed, leaves broad-lanceolate, flowers yellow.

SYN.—Shweta Surva-juya. Roxb. Flor. Ind. vol. i. p. 1.

Canna indica, yellow variety. Ibid.

DESCRIPTION.

Roots tuberous; stem from three to four feet high, smooth; leaves alternate, ovate-lanceolate, undulate, pale green, on caniculated petioles; spike lax, few-flowered; calyx of three lanceolate segments, glaucous; exterior limb of corolla in three segments, lanceolate-acute, yellowish at the base, green towards the apex, one or more of the segments reflexed as the flower approaches to maturity; upper lip of the interior limb in three segments, lanceolate, unequal, emarginate or bidentate, yellow; lip linear, bidentate, revolute, pale-yellow; filament linear, intire, declined at the apex, yellow; anther an oblong brown scale, attached to the margin of the filament, style club-shaped, pallid; stigma an obscure scale. Germen rugose; seeds numerous.

OBSERVATIONS.

Although the principal distinction between this plant and the preceding *(Canna orientalis)* consists in colour only, yet as the figure now given is from a fine living specimen, and has not before been published, we have thought it might not be unacceptable; particularly as it tends to confirm the distinction we have ventured to make, between the *Canna indica* of the *East* and the *West Indies*, and at the same time, to confirm the suggestion of Dr. Roxburgh, who, in *Asiat. Res. v.* xi. *p. 322*, and *Flor. Ind. v.* i. *p.* 1, has observed, that "the parts of the corolla are exactly alike in both varieties," and that "the *Canna lutea* of Roscoe, *(Lin. Trans. vol.* viii. *p. 338.)* must, therefore, be different, as in that the inner limb of the corolla is bifid," which suggestion will be confirmed by comparing the present figure with that of the *Canna lutea*, as given in the present work.

This plant was raised in the Liverpool Botanic Garden, from seeds sent from the East Indies, in 1819.

REFERENCES.

1. Intire flower.
2. Segments of the upper lip of interior limb of corolla.
3. Filament and anther, style and stigma.
4. Lip.
5. Exterior limb of corolla.
6. Germen and calyx.

1.

2.

3.

5.

4.

Canna Iridiflora

CANNA IRIDIFLORA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style erect, spatulate, or club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike terminal, pendulous; leaves broad-lanceolate, downy below; flowers long, tubular; upper lip in three sections, ovate, undulate, crenate; lower lip bilobate, revolute; style spatulate, gibbous; capsule large, oblong, sub-trigonous, rugose; seeds large, ovate, black.

SYN.—Canna iridiflora, *Ruiz & Pavon. Flora Peruv.* v. i. fig. 1. *ap. Roemer & Schultes,* No. 7. *Bot. Reg.* 609. *Loddiges' Bot. Cab.* No. 905. *Bot. Mag. No.* 1968.

DESCRIPTION.

Root fibrous; stems many from the same root, about ten feet high, erect, compressed; leaves deeply channelled, with numerous parallel veins from the middle rib to the margin, bright green, smooth, but not shining above, the lower surface and the sheath having a slight yellow tomentum, edges membranous; upper leaf ovate, acuminate, stem clasping; spikes numerous, from the top of the stem, nodding; rachis triangular; pedicels about the length of the germen, solitary; outer bracte very long, erect, acute, one at the base of each spike, which unsheaths before evolution, persisting; inner bracte a small ovate, persisting scale and lateral filament at the base of each pedicel; calyx three-phyllous, ovate-lanceolate, acute, coloured, persisting; corolla about six inches long, bright, rose-coloured, lighter and mottled on the outside of the tube; outer limb straight, nearly as long as the filament when revolute, of a deeper and more purple colour than the inner limb, three-cleft, segments lanceolate, acuminate, involute, converging; inner limb three-cleft, segments obovate, spreading, crenate, undulate, connected to each other and to the outer limb at unequal heights; lip reflected, resembling one of the segments of the inner limb of the corolla; filament petaloid, revolute, of bright rose-colour, as well as the lip spotted with yellow near the base; anther adhering only at the base, slender, equal in length to the revolute portion of the filament when this is stretched out; style spatulate, gibbous on one edge, yellow spotted with rose-colour; stigma terminal, and extending along the gibbous edge of the style till this becomes narrower; capsule three-sided, slightly falcate, densely covered with acuminate warts, which are at first green, afterwards yellow, and, acquiring a dark brown colour, fall off as the seeds ripen, leaving the capsule thin and membranous, with strong longitudinal nerves, intersected at right angles with more slender veins; seeds oblong, large, nearly black, very numerous, attached obliquely among yellow tomentum to the columella in one line, but pushing each other aside so as to give the appearance of two or three rows in each loculament.

OBSERVATIONS.

This, by far the most splendid Canna known, has produced a succession of flowers in the Botanic Garden at Edinburgh, during the whole months of February and March, and has ripened abundance of seed. It was planted in rich light loam, grew as readily as any of the species, and might probably even exceed ten feet high, if encouraged by abundance of pot room. It requires a very great degree of heat to perfect its flowering.—R. G.

For the fine drawing of this beautiful plant, which, although in the Botanic Garden at Liverpool, has not yet flowered there, I am indebted to the accurate pencil of Dr. R. K. Greville, of Edinburgh, author of the "*Flora*

Edinensis," and "*Scottish Cryptogamic Flora*;" and for the description which accompanies it, to Dr. Robert Graham, Professor of Botany in the University there. Their united efforts have precluded the necessity of further remarks, and supplied me with one of the chief ornaments of my present work.

REFERENCES.

1. Outer limb of the corolla, calyx, germen, and upper part of the pedicel.
2. Flower, with outer limb of the corolla torn off at its insertions.
3. Lip, stamen, style, and stigma; the stigma is the brown line terminating the style, and extending along its gibbous edge to that prominent point seen in the drawing, over the base of the anther.
4. Capsule, showing its trigonous form, the insertion of the dissepiments into the centre of its three valves, the manner of bursting at the sutures, the crowding of the seeds, the tomentum at their insertion, and the reticulated appearance of the inner surface.
5. Ripe seeds. *a* is the point of their insertion. All of natural size.

Canna carnea.

CANNA CARNEA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds globose, numerous.

SPEC. CHAR.—Spike inclined; upper lip of the interior limb of corolla in two sections, lanceolate, involute at the margins, intire, acute, nearly equal, on long claws; lip linear, intire, revolute, leaves broad-ovate, with a red line in the middle.

DESCRIPTION.

Stem three to four feet high, solid, having a swollen joint at every six or eight inches, covered with the sheathing base of the leaves; leaves alternate, broad-lanceolate, smooth on both sides, membranous on the margin, with a red or purple tinge on each side of the mid-rib on the upper surface of the leaves; petioles and sheathing slightly covered with a deciduous down; general bracte long-lanceolate, green, deciduous, inclosing the spike; floral bractes ovate, coriaceous, glaucous, triflorous; spike terminal, inclined; rachis triangular; calyx superior, persistent, in three equal segments, acute, coloured at the points; outer limb of corolla in three lanceolate, erect, nearly equal segments, pale yellow; interior segments on a long channelled claw, lanceolate, intire, acute, somewhat incurved, pale red or flesh colour; lip narrow, linear, intire at the apex, revolute; filament short, apex revolute, anther near the apex; style very long, linear, left margin incrassated; stigma a long fleshy scale.

OBSERVATIONS.

This plant approximates to the larger species of Canna lately introduced from the Brazils, but is extremely distinct from any before known. It flowered for the first time in England, in the Conservatory of Arnold Harrison, Esq. at Aighburgh, near Liverpool; having been sent to Mrs. Harrison, by her brother Mr. William Harrison, from Rio de Janeiro.

REFERENCES.

1. Intire flower.
2. The two sections of the upper lip of interior limb of corolla.
3. Lower lip.
4. Filament, anther, style, and stigma.
5. Outer limb of corolla.
6. Calyx and germen.
7. Floral bracte.

Canna lanuginosa

CANNA LANUGINOSA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous.

SPEC. CHAR.—Upper lip of the inner limb of corolla in two sections; sections emarginate; lower lip intire; stem lanuginose.

DESCRIPTION.

Roots fibrous; stem herbaceous, erect, 5–6 feet high, thickly covered, particularly towards the base, with a permanent woolly substance; leaves alternate, lanceolate-acute, with membranous edges; petioles sheathing, downy; general bracte a green lanceolate membranous sheath; spike terminal, erect; flowers in pairs; floral bractes ovate, oblique, membranous, coloured, marcescent; calyx of three leaflets, superior, pale pink; corolla with a double limb; outer limb in three segments, nearly equal, lanceolate, broad at the base, but acutely pointed at the apex, involute, converging, pink colour; inner limb with a double lip, bright scarlet, upper lip in two lanceolate segments, of very unequal size, the smaller frequently emarginate; lower lip linear-lanceolate, intire at the apex; filament lanceolate, revolute; anther long, linear; style long, linear, coloured; stigma obtuse; germen ovate, rugose.

OBSERVATIONS.

A very distinct species of this numerous genus, not hitherto either figured or described. It was raised from seeds sent to the Botanic Garden in Liverpool, by Robert Hesketh, Esq. from Maranham, in 1823.

REFERENCES.

1. Segments of upper lip of interior limb of corolla.
2. Lower lip.
3. Filament, anther, style and stigma.
4. Exterior limb of corolla.
5. Germen and calyx.
6. Anther and style, before expansion of the flowers.

Canna speciosa.

CANNA SPECIOSA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous, globose.

SPEC. CHAR.—Spike erect; upper lip of the corolla in two sections; sections ovate, deeply bifid; claws long, narrow; lower lip narrow, linear, notched at the apex, declined towards the right; leaves broad-lanceolate, strongly nerved.

SYN.—Canna speciosa. Sprengel Syst. Veg. i. 7.

DESCRIPTION.

Root tuberous, spreading to a great distance; stem 5–6 feet high, smooth; petioles decurrent, sheathing the stem; leaves alternate, broad-lanceolate, very strongly ribbed; spike erect, compact; flowers long, linear, erect, of a bright crimson colour; common bracte or spatha very large, coriaceous, green, with a red or purple margin, and thinly covered with a white farinaceous powder; proper bracte membranous, deciduous, powdered; calyx in three lanceolate, acute, nearly equal segments, bright red; corolla tubular, with a double border or limb; outer limb in three nearly equal, lanceolate segments, of a deep red colour; inner limb divided into an upper and lower lip; the upper lip deeply divided into two unequal segments, resembling two distinct petals, each of them deeply notched at the margin, bright red, and terminated at the base in long attenuated yellow claws; lower lip shorter than the upper, narrow, linear, and slightly notched, yellow at the base, and red towards the apex, declining towards the right hand when seen in front of the flower; filament linear, reflexed at the apex, yellow and red; anther long, ovate, grooved, attached to the margin of the filament; style rather small, spatulate; stigma an obtuse scale.

OBSERVATIONS.

Seeds of this very ornamental species of Canna, were brought from Africa to the Botanic Garden in Liverpool, in 1819; since which, roots of the same were received from Dr. Wallich, of Calcutta, who discovered the plant growing in Napal. It flowers freely during the summer season, and from the peculiar brilliancy of its colours, is deserving of a place in any collection.

REFERENCES.

1. Filament, anther, style and stigma, before the flower opens.
2. The two upper sections of the inner limb of corolla.
3. Lower section or lip.
4. Filament, anther and style of a perfect flower.
5. The outer limb of corolla.
6. Germen and calyx.

Canna lutea.

CANNA LUTEA.

MONANDRIA MONOGYNIA.

SECT. I. SCITAMINEÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style erect, club-shaped; stigma an obtuse scale; capsule three-celled; seeds numerous, globose.

SPEC. CHAR.—Spike erect; upper lip in two sections, emarginate, or slightly bifid; lower lip revolute, notched; leaves broad-lanceolate, strongly ribbed with a white membranous margin; flowers yellow.

SYN.—Canna lutea. Corollæ limbo interiori bifido. *Roscoe, in Trans. Lin. Soc.* viii. 338.

Canna lutea. Corollæ limbo interiori bifido. *Hort. Kew. Ed. alt.* i. p. 2.

Canna lutea. Yellow Indian reed. *Bot. Mag.* No. 2085.

Canna lutea. *Roemer & Schultes*, i. 12.

Canna lutea, *à Cannæ Indicæ varietate luteâ, à limbi interioris labio superiore bipartito primâ fronte dignoscenda. Bot. Reg.* No. 773.

Canna lutea. *Sprengel Syst. Veg.* i. 7.

DESCRIPTION.

Roots tuberous, with long fibres; stems erect, simple, smooth, 3–4 feet high; leaves alternate, broad-lanceolate, undulate, lower ones 12–14 inches long, by 5–6 broad, strongly ribbed, with a white membranous margin; petioles 2–3 inches long, channelled, decurrent, pale green and smooth on both sides; general bracte coriaceous, the place of it sometimes supplied by a floral leaf; calyx in three short, lanceolate, striated segments, green; rachis triangular, smooth; outer limb of corolla in three lanceolate segments, erect, pale yellow; upper lip of inner limb in two segments, segments unequal, ovate, emarginate, bifid with a short pallid claw; lower lip linear, revolute, notched at the apex; filament lanceolate, intire, declined at the apex; anther oblong, grooved, and placed towards the apex of the filament; style erect, spatulate; stigma a scale; capsule ovate, muricate.

OBSERVATIONS.

We have already adverted, in our description of the yellow variety of Canna orientalis, to the remark of Dr. Roxburgh, that "the present plant must be different from that variety, as in this the inner limb of the corolla is bifid." To which it may be added, that in this, the exterior limb of the corolla is erect and converging, whilst in the variety of the Orientalis it is generally reflexed; distinctions which will henceforth sufficiently serve to prevent these two very different species from being mistaken for each other.

In the first edition of the Hort. Kew. (1789) this plant was considered as a variety of the Canna Indica, but in the second edition (1810) the distinction given in Lin. Trans. vol. viii. p. 338, is adopted, and it is given as a distinct species. The reference in *Lin. Trans.* to *C. Indica, (var. β.) lutea*, in *Hort. Kew.* should however, be excluded, according to the remark in *Bot. Reg.* p. 772; as it seems to have led to the idea, that this and the yellow variety of the C. Indica (figured in this work as *C. orientalis, var. flava,)* were considered as the same plant.

The suggestion in the Bot. Reg. No. 773, that this plant is a native of South America, is most likely well founded.

The observations on the figure of this plant, given in *Curt. Bot. Mag.* No. 2085, are perfectly satisfactory, and may, moreover, be consulted with advantage, as throwing a clear light on this now very numerous genus.

The plant in the Botanic Garden at Liverpool, from which the present figure was drawn, was obligingly communicated some years since, by the Right Hon. the Earl of Mountnorris.

REFERENCES.

1. Intire flower.
2. The two upper sections of inner limb of corolla.
3. Filament, anther, style and stigma.
4. Lip.
5. Outer limb of corolla.
6. Germen and calyx.

Canna flaccida.

CANNA PALLIDA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style erect, club-shaped; stigma a scale; seeds globose, numerous.

SPEC. CHAR.—Leaves lanceolate; outer limb of the corolla in three sections, blunt; upper lip of the interior limb of the corolla in two sections, sections lanceolate, emarginate; lower lip revolute, bifid; style broad, stem, petioles, and general bractes downy; flowers pale yellow, with orange spots.

DESCRIPTION.

Root somewhat tuberous; stem from two and a half to three feet high, covered with a slight down; leaves alternate, lanceolate, rather glaucous, margins membranous; petioles sheathing the stem, and covered with a dense down or nap; common bractes of one leaf, purple, sprinkled with a fine white flour or dust; inner bracte cuneate; calyx in three equal segments; outer limb of the corolla in three lanceolate, erect, equal, blunt, yellow, or lemon-coloured segments; inner limb, upper lip in two segments, nearly equal, lanceolate, emarginate, yellow, with orange spots; lower lip linear, revolute, spotted, bifid at the apex; filament narrow, linear, revolute, spotted; anther single, grooved, adhering to the margin, towards the point of the filament; style large, spatulate, blunt; stigma an obscure scale; seeds numerous, round.

OBSERVATIONS.

A West India species, sent by Lord SEAFORTH, from Barbadoes, to the Botanic Garden, in Liverpool, and hitherto undescribed. Strongly characterised by its glaucous and downy habit.

REFERENCES.

1. Upper segments of the interior limb of corolla.
2. Filament, anther, style, and stigma.
3. Lip.
4. Exterior limb of corolla.
5. Germen and calyx.

Canna patlida var.

CANNA PALLIDA. VAR.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style club-shaped, erect; capsule three-celled; seeds globose, numerous.

SPEC. CHAR.—Upper lip of the interior limb of the corolla in two sections, lanceolate, emarginate; lower lip revolute, bifid; style slender, inclined towards the anther; flowers orange, with red spots.

DESCRIPTION.

Roots tuberous; stem from three and a half to four feet high; leaves broad-lanceolate, margins membranous; outer limb of the corolla in three lanceolate segments, nearly equal, acute, yellow at the base, and green towards the apex; upper lip of the inner limb in two segments, unequal, emarginate, bright yellow or orange, with numerous small red spots; lower lip linear, revolute, spotted, bifid at the apex; filament revolute, style slender, inclined towards the anther.

OBSERVATIONS.

Although this plant varies considerably from C. Pallida, we can scarcely consider it as a different species. As a variety it is chiefly distinguishable by its taller growth, its smoother stem, its much larger leaves, nearly double the breadth of the other; and particularly by the brighter colour of its flowers. Differences occur also in the bractes, the outer limb of the corolla, and the style, which may appear on comparing the figures now given.

This plant was raised (from seeds received from the West Indies,) at the Botanic Garden, Liverpool, where it flowered in May, 1823.

REFERENCES.

1. Filament, anther, and style, before the flower opens.
2. Germen and calyx.
3. Exterior limb of corolla.
4. Lip.
5. Filament, anther, and style.
6. Upper segments of the interior limb of the corolla.

Canna Coccinea

CANNA COMPACTA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma obtuse; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike erect, compact; flowers numerous; upper lip of the interior limb of the corolla in two sections, ovate, erect, slightly emarginate; lower lip linear, revolute, notched at the apex.

DESCRIPTION.

Roots fibrous; stem erect, compressed, leaves broad-lanceolate-acute, equilateral, margins membranous; inflorescence rising from a general sheath, four inches long, imbricate, compact; bractes inferior, ovate, emarginate, biflorous; calyx superior, triphyllous, white; corolla with a double limb; exterior limb in three sections, unequal; interior, upper lip in two sections, unequal, broad, ovate, slightly emarginate; lower lip, narrow, linear, notched at the apex, revolute; filament linear, erect; anther slightly attached to the margin; style clavate, erect; capsule ovate, three-celled; seeds numerous.

OBSERVATIONS.

This beautiful species of Canna, which approaches in appearance nearer than any other to the true Scitaminean plants, flowered in the Conservatory of John Blackburne, Esq. one of the Representatives in Parliament for the County of Lancaster, at his seat, at Hale, in that county; to which place the fine collection of plants first formed by his Grandfather, the late John Blackburne, Esq. of Orford, is now removed. To that distinguished Cultivator of natural history, the County of Lancaster is indebted for one of the earliest collections in the kingdom, which he lived to enjoy to the unusual age of 93 years. A similar taste was inherited by his daughter, the late Mrs. Anne Blackburne, and, in commemoration of their united merits, the eminent Botanist John Reinhold Foster has inscribed a genus of plants by the name of BLACKBURNIA.* The collection thus formed, is still preserved with equal care, and contains specimens of some of the finest palms in the kingdom.

The drawing of the present plant, to which we have given the name of *compacta*, from its dense spike, was made from the specimen which flowered at Hale, in 1820. From what country it was brought, or at what time it was introduced, is not known, nor has it, we believe, appeared in any other collection.

REFERENCES.

1. Upper sections of the interior limb of the corolla.
2. Filament, anther, and style.
3. Lip.
4. Exterior limb of the corolla.
5. Bracte, containing two flowers.
6. Germen and calyx.

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* BLACKBURNIA, sic ob ingentia merita in rem naturalem appellata, a JOANNE BLACKBURNE, armig. qui Orfordiæ, Lancastriensis Comitatûs, in horto amænissimo, plurimas exoticas plantas colit; et ab ejus filia, ANNA BLACKBURNE; quæ non solum eodem in plantas amore fertur, verum etiam incredibile solertiâ, aves, insecta, testacea innumera, undique Collegit.—*Forster, Charac. Gen.* p. 12.

Canna aurantiaca.

CANNA AURANTIACA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

Gen. Char.—Anther single, attached to the margin of the petal-like filament; style erect, club-shaped; stigma an obtuse scale; seeds numerous.

Spec. Char.—Upper lip of interior limb in two sections; sections ovate, bifid at the apex, nearly equal; spike loose, few flowered.

DESCRIPTION.

Roots tuberous, running horizontally, about the thickness of a man's finger; stem erect, from 4 to 6 feet high; leaves alternate, ovate-lanceolate, undulate at the margin, pale green, with decurrent petioles sheathing the stem; general bracte deciduous, or supplied by a floral leaf; floral bracte an ovate membranous scale; calyx of three acute, lanceolate segments; outer limb of corolla of three long, lanceolate, pale pink-coloured segments; upper lip of the inner limb in two segments, ovate, emarginate, nearly equal, deep orange; lower lip narrow, linear, emarginate, yellow, with orange spots, declined; filament linear, intire; anther adhering to the margin of the filament, near the apex, grooved, and resembling a grain of wheat; style club-shaped, erect, orange colour; stigma an obscure scale.

OBSERVATIONS.

The seeds of this hitherto undescribed species of Canna, were sent from Brazil by William Swainson, Esq. in the year 1819, to the Botanic Garden in Liverpool, where the plants have since regularly flowered. It is one of the more showy of the species, and from its tall growth and tuberous roots, appears to be allied to the esculent tribes of this genus, which are peculiar to the tropical parts of South America.

REFERENCES.

1. The two sections of the interior limb of corolla.
2. Filament, anther, and style.
3. Lower lip.
4. Outer limb of corolla.
5. Germen and calyx.
6. Anther, style and stigma, before the expansion of the flower.

Canna denudata, var

CANNA DENUDATA. VAR.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style erect, club-shaped; stigma obtuse; capsule three-celled; seeds numerous.

SPEC. CHAR.—Upper lip of the interior limb of corolla wanting; lower lip erect, spatulate, intire; leaves broad-lanceolate-acute, margins membranous, coloured.

DESCRIPTION.

Roots perennial, tuberous, stoloniferous, with long cord-like fibres; stems herbaceous, smooth, from ten to twelve feet high; leaves alternate, two feet long, broad-lanceolate-acute, equilateral, strongly ribbed, smooth on both sides, with a membranous purple margin; petioles concave, sheathing, with a coloured margin; spike terminal; flowers erect, alternate, bifarious; general bracte green; partial bracte biflorous, green, margins purple; calyx of three lanceolate-acute, unequal segments; exterior limb of the corolla in three unequal segments, the central one the shortest, and frequently reflexed; upper lip of the interior limb wanting; lower lip broad, spatulate, intire; filament resembling the lip in shape and colour, and both of them rolled in at the base, so as to form the faux of the flower, which is beautifully spotted with red on an orange ground; style nearly the length of the filament; flowers bright orange.

OBSERVATIONS.

Although this may be considered as only a variety of the *denudata*, it is a much larger and finer plant, not yielding in splendor of appearance to many of the genus. It is a native of *Rio de Janeiro*, and was sent by Messrs. LODDIGES, of Hackney, to the Botanic Garden at Liverpool, where it has frequently flowered.

REFERENCES.

1. Interior limb of corolla.
2. Filament and style.
3. Lip.
4. Exterior limb of corolla.
5. Germen and calyx.

Canna denudata.

CANNA DENUDATA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style erect, club-shaped; stigma obtuse; capsule three-celled; seeds numerous.

SPEC. CHAR.—Upper lip of the interior limb of corolla wanting; lower lip erect, lanceolate, intire; leaves linear-lanceolate.

DESCRIPTION.

Roots fibrous and woody; stem slender, smooth, from three to four feet high; leaves alternate, linear-lanceolate, on short petioles, strongly nerved; general bracte coriaceous, smooth; partial bracte short, deciduous; spike loose; calyx of three lanceolate green segments; exterior limb of the corolla in three unequal segments, the middle one the smallest, and frequently reflexed; upper lip of the interior limb wanting; lower lip long, linear, intire at the apex, and broader towards the base; filament petal-like, intire, as long as, and resembling the lip in shape and colour, forming with it the appearance of a corolla of two petals; anther linear, slender; style spatulate, pallid, shorter than the filament; flowers bright red.

OBSERVATIONS.

This very singular species of Canna, now first figured, was introduced into the Botanic Garden at Liverpool, from the Royal Gardens at Kew, under the name of *Canna Gigantea*, in October 1820, and has since flowered there several times, maintaining the same constant character, in wanting the sections of the upper lip of the corolla, the appearance of which is supplied by the size and brilliancy of the other parts. It is also sufficiently distinguished from the other species by its frutricose habit, and its long, linear, ribbed, coriaceous leaves.

REFERENCES.

1. Intire flower.
2. Outer limb of corolla.
3. Filament, anther, style, and stigma.
4. Germen and calyx.
5. Lip.

Maranta Arundinacea.

MARANTA ARUNDINACEA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style tubular; stigma deflexed, trilobate; capsule ovate; seed rugose, single.

SPEC. CHAR.—Root long, tuberous, farinaceous; stem radical, herbaceous, downy, deciduous; leaves lanceolate-acute, inæquilateral, slightly downy on both the upper and under surface; petioles of the lower leaves long, with a paler ganglion; seed single, rugose.

SYN.—Canna Indica, radice alba alexipharmica, *Sloane Jam. 22, par.* 1, *p. 253, tab.* 149, *fig. 2.*

Maranta arundinacea, *Lin. Willd.* 1, 13. *Roemer & Schultes. Maranta, sp.* 1.

Maranta arundinacea, *Smith, in Rees' Cyclopædia.*

Maranta arundinacea, *Sims, Bot. Mag. No.* 2307.

DESCRIPTION.

Root tuberous, succulent, tapering towards the stem, frequently six inches long, covered with large scales; stems rising from the smaller end of the tuberous root, erect, herbaceous, 4–5 feet high, slightly covered with a soft down; leaves alternate, broad-lanceolate-acute, frequently cordate at the base, inæquilateral, sericeous or downy on both sides; petioles of the lower leaves long, terminating next the leaf in a pallid ganglion; branches dividing in pairs jointed at every division; panicle terminal, dichotomous; peduncles in pairs, downy, declined; common bracte linear-lanceolate, slightly hairy, grooved or striated, green; inner bracte lanceolate, membranous; calyx in three deep, lanceolate, equal segments; corolla in two limbs; outer limb in three segments, equal, ovate, intire, obtuse; inner limb in three segments, two upper segments erect, equal, ovate, intire; lower segment or lip ovate, slightly bifid, the whole corolla pure white; filament erect, petal-like, hooded, before impregnation covering the style; anther attached to the margin of the filament, single; style tubular, compressed, recurved; stigma ringent, three-lobed; capsule ovate, hairy, one-celled; seed single, angular, rugose, perforated with cavities.

OBSERVATIONS.

Considerable difficulty has arisen in distinguishing the true *arundinacea* from another species nearly allied to it, and which also produces the valuable farinaceous substance called arrow-root. Both these species are grown in the Botanic Garden at Liverpool, where they have flowered, and ripened their seeds. In order to distinguish them, it may be sufficient to observe, that the lower leaves of the *arundinacea* are broad, and frequently cordate towards the base, tapering towards the extremity, and terminating in a sharp point; those of the other species are longer, inclined to a linear shape, and terminating more obtusely. All the leaves of the former are downy on both sides, whilst those of the latter are smooth, except a line of thin hairs on each side of the mid-rib, on the under side of the leaf. In the former the ganglions are paler than the petiole; in the latter they are darker, and of a dusky brown. The filament is also broader in the latter species, and the corolla is larger on the whole. After these striking discrepancies, it is not possible they should be again confounded.

The *M. arundinacea* appears to be the plant described by Sloane, but not that of Martyn, *Pl. Rar. Dec.* iv. p. 39. which, from the following passage, is most probably our latter species. After observing that *his* plant was brought from La Vera Crux, by *Houston*, to the Chelsea Garden, he adds, "Huic persimilis esse videtur, atque eadem forsan judicanda planta, quam in Historia sua *Cannæ Indicæ* nomine, *radice alexipharmica* descripsit Clarissimus

Sloaneus. Illa enim in Horto Chelseyano florens, se ad Marantæ genus pertinere confirmavit. Flores autem *minores* et *pauciores* quam in Houstoni planta conspiciunter. Si vero, ut judicare quidem fas est, hæ plantæ inter se specie non differant, &c." That they are specifically different is, however, evident from the foregoing remarks; and as Martyn has not observed any down on the leaves of his plant, (a circumstance too remarkable to have been omitted in his description,) this may be taken as an additional proof that his plant is *not* the *true arundinacea.*

According to Sloane, the present plant was first brought to Jamaica and the Caribbean Islands from Dominica. It is undoubtedly a native of the tropical parts of America, and is not even enumerated in the *Flora Indica* of Dr. Roxburgh. The arrow-root of the East is the Curcuma.

The following account of the cultivation and preparation of the arrow-root, is given from the late Dr. William Wright's *Plants of Jamaica;* the original unpublished MS. of which is in the Library of the Botanic Garden at Liverpool.

" Indian arrow-root is cultivated in enclosed fields. After being ten or twelve months planted, it is dug up. The larger roots are selected for use, and the smaller again planted for a future crop.

" The roots are white, jointed, of the thickness of a man's finger, and from four to eight inches long. These roots, being washed, are beaten in large, deep, wooden mortars, then thrown into a tub of clear water, and well stirred. The milky liquor is passed through a hair sieve, and the fibrous part thrown away. In about an hour, the amylaceous matter subsides; the clear water is drained off, and more fresh water added, which being afterwards poured off, the white mass is taken out, and dried in the sun. One-half the weight of these roots is pure starch."

I am informed by my friend Dr. Traill, that by the Indians of Guiana it is called *arri,* or *arree,* whence probably the name of *arrow-root.*

REFERENCES.

1. The flower intire.
2. Calyx.
3. Filament, anther, and style.
4. Style and stigma separate.
5. Seed-vessel.
6. Seed.

1 2 3

Maranta Indica.

MARANTA INDICA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, reflexed; stigma perforate, trilobate at the apex; seed single.

SPEC. CHAR.—Root tuberous, farinaceous; stem perennial; branches dichotomous; leaves linear-lanceolate, smooth on both sides, except a villous line on each side the mid-rib beneath; petioles long, connected with the leaf by a dusky ganglion.

SYN.—Maranta Arundinacea, Cannacori folio. *Plum. Gen.* 16.

Maranta Arundinacea. *Martyn, Cent.* iv. p. 39.

Maranta Arundinacea. *Aublet*, v. i. p. 3.

Maranta Sylvatica. *Roscoe, in Trans. Lin. Soc.* v. viii. p. 340.

Maranta Sylvatica. *Smith, in Rees' Cyclop.*

Maranta Indica de Tussac ? *Ap. Roemer & Schultes,* vol. i. p. 14. No. 2.

DESCRIPTION.

Root tuberous, long, fusiform, squamose; stem perennial, cylindrical, smooth, with dichotomous branches; petioles long, terminating at the leaf with a dusky ganglion; leaves a fine green, ovate, or slightly cordate at the base, linear-lanceolate, smooth on both sides, except a line of very slight hairs on each side the mid-rib below; calyx in three lanceolate leaves, equal; flowers in pairs, large, pure white; corolla with a double limb, outer limb in three segments, segments obtuse, intire, equal, inner limb in three segments, two upper segments equal, ovate, intire; lower segment or lip broad-ovate, slightly divided into two obtuse lobes; filament broad, hooded; anther single, oblong, closely attached, sometimes on the right, and at others on the left margin of the filament; style tubular, recurved; stigma ringent, three-lobed; capsule ovate, one-seeded; seed perforated.

OBSERVATIONS.

We consider this to be the plant said by Martin, to have been discovered by Houston at La Vera Cruz, and sent to the Botanic Garden at Chelsea; and also the plant of Plumier, before referred to; whose drawing, of which an outline is now before us, represents the leaf as villous on each side the lower mid-rib only; by which it is distinguished from the *Arundinacea*, the leaves of which are downy on both sides. It is also of a loftier growth than the *Arundinacea*, frequently rising to six feet high.

This species produces also the farinaceous substance called arrow-root, and is said to be cultivated even more extensively than the *Arundinacea* for that purpose, in several of the West India Islands.

The plant in the Botanic Garden at Liverpool, from which the present figure was drawn, was sent by Lord Seaforth from Barbadoes, in 1813. It has also been received there from St. Vincent's.

There is also in the Liverpool Garden, a variety of this species with purple stems, and the mid-rib of the leaf purple beneath. The squamæ of the root are also purple. This variety was sent from Trinidad by C. S. Parker, Esq.

The *Maranta Indica* is said by Roemer and Schultes to have been brought from the East Indies, through England, into America; but it does not appear in the *Flora Indica* of Dr. Roxburgh, where not a single Maranta is enumerated; and is most probably a native of the western hemisphere.

These observations will sufficiently answer the question proposed by Roemer & Schultes, *Syst. Veg.* v. i. p. 16.

REFERENCES.

1. Intire flower.
2. Filament and anther.
3. Style and stigma.

Maranta divaricata

MARANTA DIVARICATA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style tubular, reflexed; stigma trilobate; capsule ovate; seed single.

SPEC. CHAR.—Stem herbaceous, erect, with dichotomous branches, and alternate bractes or sheaths coloured at the apex; leaves alternate, broad-lanceolate-acute, inæquilateral, glaucous below.

DESCRIPTION.

Roots fibrous, culm herbaceous, erect, with branches diverging almost at right angles from the stem, which is distantly imbricated with ascending bractes or scales, each terminating in an obtuse pink-coloured apex; leaves alternate, broad-lanceolate, acute at the apex, obtuse, and somewhat cordate at the base, with a villous mid-rib below, strongly nerved, dark green above, glaucous below; petioles with a short, villous ganglion, and a long decurrent sheath; panicle rising laterally from the axil of the leaves, long, slender, and terminating in dichotomous peduncles; calyx superior, of three equal, lanceolate segments, green; corolla tubular, outer limb in three segments, ovate, equal, intire, pure white, inner limb in three segments, two of them lateral, equal, ovate; the third section, or lip, rather larger, and slightly notched at the apex; anther ovate, attached by a short subulate stamen to the margin of a hooded petal-like filament; style tubular, connate with the filament, revolute; stigma obtusely three-lobed; germen ovate, villous; seed single, gibbous.

OBSERVATIONS.

A new and very distinct species of Maranta, readily known by its imbricated stem and lateral dichotomous shoots, from which we have given it the name of *divaricata*. It was raised from seeds sent from the Brazils by Mr. William Harrison, and first flowered in the Conservatory of Arnold Harrison, Esq. at Aighburgh, near Liverpool, in September 1825; from which plant, apparently a very young one, the present figure was taken. The flowers were of very short duration, and did not produce seeds; but the three-lobed stigma, and the one-celled germen, sufficiently distinguish its genus from Phrynium, with which alone it could be confounded.

REFERENCES.

1. Intire flower, natural size.

2 & 3. Different views of the filament, anther, style and stigma, magnified.

Maranta divaricata Var.

MARANTA DIVARICATA. VAR.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style tubular, revolute; stigma trilobate; capsule ovate; seed single.

SPEC. CHAR.—Stem herbaceous, imbricated, lateral branches dichotomous; leaves purple below, and on the mid-rib above.

DESCRIPTION.

Roots fibrous; stem herbaceous, succulent, erect, imbricated with long alternate bractes or scales, terminating in an obtuse apex, of a purple colour; lateral branches diverging from the principal stem in pairs, and covered with similar scales; leaves alternate, broad-lanceolate-acute, cordate at the base, and of a deep purple colour below; petioles purple, terminating in a green villous ganglion; panicles long, slender, supporting several pairs of white flowers, with a long villous bracte to each pair; calyx superior, of three equal lanceolate segments, green; corolla tubular, outer limb in three segments, ovate, equal, intire; inner limb in three segments; lateral segments intire, ovate, equal, the third section or lip larger, ovate, intire, or slightly lobed at the apex; filament, anther, style and stigma, as in the genus; seed-vessel a succulent, pear-shaped capsule, with a single, gibbous seed, perforated with cavities, which contain the embryo.

OBSERVATIONS.

Although this plant differs but little in conformation from that which we consider as the original species, yet its diversity in colour, its larger growth, and its having flowered and ripened its seeds in Europe, have induced us to give a figure of it. Like the former, it was sent from the Brazils by Mr. William Harrison, and flowered in the Conservatory of Arnold Harrison, Esq. at Aighburgh, to whose kindness we are indebted for the opportunity of making the present drawing.

REFERENCES.

1, 2, 3. Different views of the filament, anther, style and stigma, magnified.

4. Panicle and capsules, crowned with the permanent calyx.

5. Capsule opened longitudinally.

6. Seed.

7. Ditto, cut transversely, to show the cavities.

8. Ditto, cut longitudinally.

9. Embryo.

Maranta gibba

MARANTA GIBBA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style tubular, depressed; stigma perforate; corolla trifid; capsule ovate; seed single.

SPEC. CHAR.—Root fibrous; stems shrubby, dichotomous; leaves alternate, cordate-lanceolate, equilateral, smooth; petioles short, ganglionated, hairy; seed gibbous.

SYN.—Maranta gibba. Sir J. E. Smith, in Rees' New Cyclop.

DESCRIPTION.

Roots perennial, creeping, somewhat woody; stem fruticose, ramose, downy when young; branches dividing in pairs, jointed at every division, joints hairy; leaves alternate, cordate-lanceolate, acute, smooth on both sides; sheaths of the leaves closely embracing the stem, slightly villous; petioles ganglionated, hairy, very short in the upper leaves, but longer below; panicle terminal; flowers in pairs; common bractes linear-lanceolate, concave, smooth; inner bractes linear concave, membranous; calyx of three lanceolate segments; peduncle ganglionated; corolla monopetalous in two limbs; outer limb in three segments, equal, ovate, intire, white; inner limb in three sections, unequal; the upper sections ovate, erect; the lower section or lip slightly bifid, pure white; filament petal-like, erect, on a short claw, ovate, hooded; anther single, attached to the margin of the filament; style tubular, recurved; stigma ringent; capsule ovate; seed single, ovate, rugose, gibbous on one side, perforated within by a cavity which contains the germ or radicle.

OBSERVATIONS.

A native of Barbadoes, and sent by the Earl of Seaforth, when Governor of that Island, to the Botanic Garden in Liverpool. Although nearly resembling in appearance the *Maranta Arundinacea*, or Arrow Root, it does not possess any of the nutricious qualities of that useful plant. It is observable, that in the lower flower, the anther is usually attached to the left, in the higher to the right hand side of the filament. It may also be worthy of remark, that the anther bearing margin is thickened downward to the germen, by a concealed filament, which is sometimes detached when it approaches the anther; which may perhaps have given occasion to describe it as "*filamentum bifidum, hinc antheriferum, inde stylum filiformen involvens.*" *Plum. ap. Meyer, Flor. Essequib.* p. 11. An account of this plant was first given in Rees's New Cyclopædia, by Sir J. E. Smith, from the living plant in the Botanic Garden at Liverpool, in the year 1808; but we believe this is the only figure of it that has yet been published.

REFERENCES.

1. Calyx and peduncle.
2. Flower and capsules.
3. Lip of the corolla.
4. Style and stigma.

5 & 6. Anther, and hooded filament.

7. Capsule open.
8. Seed.

Maranta Tonchat,

MARANTA TONCHAT.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style tubular, revolute; stigma trilobate; capsule ovate, one-celled; seed single, triangular, rugose.

SPEC. CHAR.—Stems fruticose, jointed, erect, compressed; branches dichotomous, hirsute; leaves ovate-lanceolate, on short, ganglionated petioles, smooth on both sides, inæquilateral; capsule ovate; seed single.

SYN.—Maranta Tonchat. *Aubl. Guian.* v. i. p. 3.

Maranta Tonchat. *Willd.* i. 13.

Maranta Tonchat. *Roemer & Schul.* i. 14. *Ap.* 557.

Maranta Tonchat. *Sprengel,* i. 8.

Maranta angustifolia. *Bot. Mag.* 2398. ?.

DESCRIPTION.

Roots perennial, ligneous, creeping; stem fruticose, simple, erect, smooth, of a highly polished dark green; branches numerous, dichotomous, spreading, jointed at every division, hairy; leaves alternate, ovate-lanceolate, 4–6 inches long, inæquilateral, on a short, ganglionated, hairy petiole; spike terminal, flexuose, 4–6 flowers; common bracte concave, pale green, smooth; inner bracte lanceolate, membranous; flowers in pairs; calyx superior, of three leaves, green, persistent; corolla tubular; outer limb in three equal, ovate segments; inner limb in three segments, pale blue, or lilac colour; two of the segments erect, equal; the third section, or lip, somewhat larger, undulate, depressed; anther attached to the margin of the filament; style tubular, revolute; stigma perforate, with a trilobate margin; capsule ovate, 1-celled, 1-valved; seed single, triangular, rugose.

OBSERVATIONS.

Few plants have given rise to greater errors than the present. These have principally arisen from almost all systematic writers having mistaken this plant for the *Tonchat scytam* of Rumph. *Amb.* iv. 22. *t.* 7; the *Donax arundastrum* of Loureiro, *Cochin Chi.* 15; the *Phrynium dichotomum* of Roxb. *Flor. Ind.* i. p. 2; a plant essentially and generically different, as may appear by comparing the ample description of the last mentioned writer, with that now given; from which we shall find, that besides several diversities in the form and colour of the corolla, the capsule in the East Indian plant is broad, turbinate, the size of a cherry, rugose, somewhat three-lobed, three-celled, three-valved; thereby conforming to the other species of Phrynium described in that work, but totally at variance with the plant of Aublet. The difference between these plants was long ago observed by Ventenat, as cited in *Rees' Cyclop.* by Sir J. E. Smith, who has remarked, that the *M. Tonchat* of Aublet may be merely a variety of the first (or Eastern) species, but that there was then no means of determining it. This difficulty is, however, now removed, and the *Phrynium dichotomum,* (to which all the Eastern synonyms apply,) and the *Maranta Tonchat,* must henceforth be considered as species of different genera of plants; of one of which genera, (Maranta,) it appears from the Flora Indica of Dr. Roxburgh, the East does not furnish a single specimen.

We learn from Aublet, vol. i. p. 3, that the *Maranta Tonchat* grows in Cayenne and Guiana, where it is used in making baskets and *pagaras,* or small hampers for household use.

The plant from which the present drawing is made, was sent by the late Hon. Charles Greville, in the year 1807, to the Botanic Garden in Liverpool; from which time it has annually flowered, and ripened its seeds there.

From a dried specimen of the *Phrynium dichotomum,* sent by Dr. Carey of Serampore, to Mr. H. Shepherd, at the Botanic Garden, Liverpool, it appears that the flowers are more than double the size of those of the *Maranta Tonchat.*

REFERENCES.

1. Germen and calyx.
2. Filament, anther, style and stigma.
3. Panicle and capsules.
4. Seed.

Maranta cuspidata?

MARANTA CUSPIDATA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the petal-like filament; style tubular, revolute; stigma perforate, trilobate; seed one, oblong.

SPEC. CHAR.—Stem simple, erect, jointed, pallid, 1–2 feet in height; leaves ovate, acute, cordate at the base, cuspidate at the apex, inæquilateral; mid-rib slightly downy; petioles long, erect; ganglions villous; flowers in pairs.

DESCRIPTION.

Root fibrous; culm herbaceous, jointed; leaves alternate, broad-lanceolate-acute, cuspidate at the apex, inæquilateral, strongly nerved; mid-ribs slightly covered with a fine down; petioles long, terminating next the leaf in a jointed ganglion, slightly villous on the upper side; panicle terminal; calyx superior, in three leaves, lanceolate, yellowish, diaphanous; outer limb of the corolla in three lanceolate segments, equal, purple-spotted, erect when young, but reflexed as the flower advances; inner limb with a double lip; upper lip in two segments, erect, equal, circular, crenate, bifid at the apex, yellow; lower lip very short, involute, ovate, orange colour; filament erect, petal-like, hooded, yellow; anther attached to the margin of the filament, ovate; style tubular, revolute, covered when young with a secondary, small, proper hood; style perforate, revolute; stigma obtusely three-lobed; capsule smooth, three-valved, one-celled; seeds single.

OBSERVATIONS.

This new and ornamental addition to the genus *Maranta*, was brought from Sierra Leone by Mr. George Don, and liberally presented by the Horticultural Society, with several other Monandrian Plants, to the Botanic Garden in Liverpool, where it flowered for the first time, in the beginning of October 1826.—From its creeping roots it sends up numerous stems of nearly equal height, one of which only is represented in our figure. The flowers are of a bright yellow or gold colour. Although this species of *Maranta* approaches in its general habit nearly to *Phrynium*, it is entirely distinct in its inflorescence and fructification, being wholly divested of glumaceous bractes, and having a three-lobed stigma.

REFERENCES.

1. Intire flower.
2. Germen and calyx.
3. The three sections of outer limb of corolla.
4. The two sections of upper lip of inner limb of corolla.
5. Filament, anther and style, with the under lip in its natural position.
6. The same without the lip, the style covered by its proper hood before it becomes revolute.
7. Style detached from the flower, with its three-lobed anther.
8. Lower lip expanded. All of their natural size.

Maranta bicolor.

MARANTA BICOLOR.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular; stigma revolute, trilobate; capsule one-celled; seed single, gibbous.

SPEC. CHAR.—Spike bursting from a sheathing vagina about the middle of the petiole; flowers alternating in ascending fascicles, and expanding in succession, white, with red spots; leaves broad ovate, mucronate, clouded with light and dark green above, ferruginous red below, ganglions hairy.

SYN.—Maranta bicolor. *Bot. Reg.* No. 786.

DESCRIPTION.

Root a round tuber, with very strong fleshy fibres; leaves radical, on long purple sheaths or petioles, which terminate in a villous ganglion, broad-ovate, somewhat mucronate, clouded with shades of green above, dark red on the under surface; spike jointed, bursting from the petiole; flowers in fascicles, alternating on the rachis, each fascicle on a long pedicel, and bearing several flowers expanding in succession in pairs; bractes lanceolate, smooth, striated, pale green; calyx superior, of three lanceolate segments, terminating in a fine mucronated point; outer limb of corolla in three segments, nearly equal, lanceolate, white; inner limb in three segments, two of them erect, broad, spreading, bilobate, heart-shaped, and marked in the centre of each with a narrow purple streak; the third section or lip erect, hooded, white, with a purple margin, screening the anther and style during impregnation; filament an irregularly petal-like wing, lobed on one side, and incrassated on the other, to which the anther is attached by a short pedicel; anther ovate, two-celled; style connate with the filament, tubular, erect, recurved; stigma terminal, in three lobes; capsule villous, one-celled.

OBSERVATIONS.

A good figure of this very singular plant, lately introduced from the Brazils, is given in *Bot. Reg.* No. 786, except that it there appears to flower from the centre of the leaves, which is not the case with our plant, which had three spikes of flowers upon it, all of which flowered from the *petiole* of the leaf.

The plant here figured was kindly communicated, in flower, from Lord Milton's Conservatory, at Wentwŏrth House, by Mr. Joseph Cooper, in the beginning of March last, and still continues (June 15,) to produce a daily succession of flowers, which remain only three or four hours in perfection.

REFERENCES.

1. Flower, natural size.
2. Germen and calyx.
3. Part of the flower, slightly magnified.
4. Filament, anther, style and stigma, greatly magnified.

Phrynium grandiflorum

PHRYNIUM GRANDIFLORUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament, either immediately or by a short stamen; style tubular, recurved, truncate; stigma an orbicular orifice below the apex; seeds 3.

SPEC. CHAR.—Leaves radical, on long petioles, broad-lanceolate-obtuse, strongly nerved, inæquilateral; petioles tapering, ganglionated; flowers central, large, pale yellow.

DESCRIPTION.

Root perennial, with several long parsnip-shaped, diverging tubers, terminating in small farinaceous knobs or balls; leaves rising from the centre, broad-lanceolate-obtuse, very inæquilateral, strongly nerved, smooth on both sides, pale green, on long ganglionated petioles, which are broadest at the base, flowers rising in succession from the centre of the leaves; bractes one-flowered; calyx superior, of three leaves, equal, lanceolate, slightly tinged with rose-colour; outer limb of corolla in three lanceolate, involute equal segments; inner limb of three unequal segments; the two lateral ones ovate, the central one or lip, hooded, and covering in impregnation the anther and stigma; filament petal-like, short, the margin incrassated on which the anther is placed near the apex; style the length of the filament, incurved towards the anther, afterwards recurved, tubular, truncate at the apex; stigma a cylindrical tube or ring, placed underneath the apex of the style.

OBSERVATIONS.

This singular plant was sent by the London Horticultural Society to the Botanic Garden in Liverpool, in 1823, and flowered there July 3rd, 1824. It was discovered in Rio de Janeiro, by the late Mr. John Forbes, Botanical Collector to the Horticultural Society, whose premature death is a real loss to the lovers of Botanical science. Of the distinction between *Phrynium* and *Maranta*, a particular account will be given in another part of the present work.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Calyx.
4. Style and stigma magnified.
5. Intire flower.
6. Filament, anther, style, and stigma natural size.
7. Outer limb of corolla.

8 & 9. Different views of the parts of fructification.

Phrynium parviflorum

PHRYNIUM PARVIFLORUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR. — Anther single, lateral, attached to the margin of the filament; style incurved at the apex, grooved; Capsule 3-celled.

SPEC. CHAR. — Leaves Radical, long-petiolated, broad-lanceolate, inæquilateral, strongly nerved; Petioles gangli-onated; flower-spike bursting from the petiole; Capsule, only one cell, fertile.

SYN.—Roxburgh, Phrynium Parviflorum, Flor. Ind. vol. I. p. 7.

Small-flowered Phrynium.

DESCRIPTION.

Root perennial, running horizontally, tuberous, with strong hairy fibres; *leaves* radical, broad-lanceolate, strongly nerved, inæquilateral, smooth on both sides, intire; *petioles* generally longer than the leaf, round, green, finely villose, attached to the leaf by a smooth round ganglion an inch long; *spike* bursting from the inner side of the floral petiole, somewhat above the middle, from a sheathing *vagina* having a tuft of fine hairs at the base on the outside, and a smaller tuft at the apex within; *common bractes* lanceolate, acute, finely pointed, green, slightly hairy, with a smooth, pellucid, membranous margin; *inner bractes* lanceolate, white, membranous, with a ridge down the middle on the back; *flowers* almost inconspicuous, two to each bracte; *calyx* of three leaflets, lanceolate-acute, smooth, white; *corolla* tubular, with a double limb; *outer limb* of three segments, equal, intire, waved, reflexed, white, slightly villous; *inner limb* bilabiate; *upper lip* of two segments, equal, obovate, intire, somewhat undulate, orange, on a short claw; *claw* white; *lower lip* small, hooded, enveloping the parts of fructification when young, but detached when the flower is expanded, orange; *filament* petal-like, erect, ovate, tipt with orange, one margin thickened, with the anther attached near the apex; *anther* single, linear, grooved; *style* erect, grooved, incurved at the apex; *stigma* funnel-shaped, compressed, declined; *germen* inferior, oblong-ovate, with a few scattered hairs round the base of the *calyx*, three-celled, one only fertile.

OBSERVATIONS.

This genus was established by Willdenow from the *Phyllodes placentaria* of Loureiro, which Willdenow denominated *Phrynium Capitatum*, and referred to the figure in Hortus Malabaricus, *Tom. xi. tab.* 34, which had been erroneously considered as *Pontederia ovata.* A much more correct figure of the *Phrynium Capitatum* is given by Dr. Roxburgh in his "*Description of Monandrous Plants,*" in *Asiatic Researches, vol. xi. p. 323.*

The Phrynium Parviflorum grows to the height of three feet or upwards. It is a native of the Eastern parts of *Bengal*, and was sent from Calcutta by Dr. Wallich, to the Botanic Garden, in Liverpool, in 1820; where it flowered in July, 1823, and is now figured for the first time.

REFERENCES.

1. Calyx and Corolla.
2. Sections of the upper lip of the inner limb of Corolla.
3. Filament and anther, style and stigma, with the lower lip of Corolla.
4. Lower lip detached.
5. Style and stigma detached.
6. Filament and anther detached.
7. Outer bracte.
8. Inner bracte.
9. Calyx detached

Phrynium comosum

PHRYNIUM COMOSUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma a circular orifice, depressed; capsule three cells, three seeds.

SPEC. CHAR.—Leaves radical, on long foot-stalks, æquilateral; scape rising from the centre of the leaves; simple, smooth, erect; flower-spike capitate, terminal, globose, comose; floral bractes lanceolate, numerous, reflexed; flowers yellow.

SYN.—Maranta comosa, acaulis, scapo nudo, spicato, comoso; comæ foliolis reflexis. *Lin. Suppl.* p. 80. *ap. Willd.* i. 14.

Maranta comosa (curcuma nova. *Amœn. Acad.* v. 8. 850.) *Sir J. E. Smith, in Rees' New Cyclop.*

Maranta comosa. *Ex descriptione Cl. Swartzii, ap. Roemer & Schultes.* v. i. p. 15.

Myrosma comosa, scapo tereti, coma foliolis reflexis, bracteis trifloris. *Surinam. Sprengel, Syst. Veg.* i. p. 9.

DESCRIPTION.

Leaves radical, broad-ovate, equally divided by the mid-rib, finely striated with regular parallel nerves, two feet long and a foot in breadth, on long petioles; scape radical, from the centre of the leaves, three feet high, round, simple, naked, smooth, somewhat incrassated towards the summit; flowers terminal, capitate, comose, expanding from numerous lanceolate carinated green bractes, each bracte containing two flowers; bractes reflexed towards the base, and forming a globular foliaceous tuft or head; opposite to the exterior bracte appears the angular winged bracte, characteristic of the genus; flowers in pairs, dividing from a common pedicel; calyx superior, of three equal, green leaflets; corolla tubular, tube slender, and upwards of an inch in length, expanding into a double limb; outer limb in three equal, ovate segments; inner limb bilabiate; upper lip in two irregular sections, one of them bearing on its margin the anther, on a short subulate process, the other hooded; lower lip deeply divided into two ovate lobes; flowers pale yellow; style connate with the upper lip, tubular, revolute, truncate; stigma a simple, circular, membranous orifice; capsule three-celled; seeds three.

OBSERVATIONS.

It is not without great hesitation on the part of former writers, that this very singular plant has hitherto been generally referred to the genus *Maranta.* Even the younger Linnæus, in assigning it to that station, expressed his doubts on the subject; the specific description in Roemer & Schultes, (v. i. 15.) is accompanied by the question, "*An novum genus?*" And Sprengel has united it, under the name of *Myrosma Comosa,* as another species to *Myrosma Cannæfolia,* which, it will appear from the present work, is itself a *Phrynium.* The opportunity now afforded us of examining the flowers, and of ascertaining with certainty their generic distinctions, has enabled us to place this subject beyond all doubt.

The plant described by the younger Linnæus was sent by Dalberg from Surinam. That from which the present figure is given, was brought from the island of Trinidad by Charles S. Parker, Esq. who found it flowering there in a shady wood, near a plantation called Trafalgar, in June 1824, and to him we are indebted not only for the specimen of the plant here given, but for much information in drawing up our description, from which it indisputably appears to be a species of *Phrynium.*

REFERENCES.

1. Bractes opened, exhibiting two flowers, with germen, calyx and corolla.
2. Anther, style and stigma, magnified.
3. The stigma more highly magnified.
4 & 5. Different views of exterior bractes of corolla.
6. Different views of the opposite angular winged bracte.

Rhynchium latinum

PHRYNIUM ZEBRINUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, recurved, truncate; stigma an orbicular orifice, depressed; seeds three.

SPEC. CHAR.—Leaves radical, on long petioles, with a dusky purple ganglion, inæquilateral, ovate-oblong, clouded on the upper side with shades or streaks of green, the under side purple; scape radical, capitate, imbricate, flowers purple.

SYN.—Maranta zebrina, *Curt. Bot. Mag.* 1926.

Maranta zebrina, *Lindley, in Bot. Reg.* 385.

Calathea zebrina, *Donn, Hort. Cantabr.* p. 3. *Ed.* 10.

DESCRIPTION.

Root tuberous, with very strong spreading fibres; leaves radical, equitant, on strong sheathing petioles, terminating at the leaf in a dark purple ganglion, striated with shades of green on the upper surface, and dark purple below, ovate-oblong, inæquilateral; scape radical, erect, compactly imbricated with large coriaceous bractes of a purplish green colour; flowering spike capitate, compact, imbricate with large orbicular exterior bractes, which are revolute at the apex, each bracte containing many flowers rising in pairs in succession; interior bractes biflorous, ovate, striate, membranous, purple, slightly villous, inclosing another lanceolate, bidentate, angular bracte, distinguished by two membranous wings running down the back, and which seem to be characteristic of this genus; calyx superior, of three lanceolate petal-like segments, white at the base, and purple at the apex, extending the whole length of the tube of the corolla. Corolla tubular, with a double limb; outer limb in three lanceolate segments, erect, equal, dark purple; inner limb in three segments, the two lateral ones intire, ovate, obtuse, spreading, white, finely striated with purple; the third segment, or lip, declined, irregular, truncate, hooded at the apex, so as to protect the anther and filament, white, tipt with purple; filament acinaciform, diaphanous; anther grooved, and placed near the apex of the filament; style cylindrical, revolute, truncate; stigma orbicular, with a coriaceous margin opening below the truncated apex of the style; germen three-celled, seeds three, oblong, angular.

OBSERVATIONS.

Notwithstanding the respectable authorities on which this singular plant has hitherto been consigned to the genus *Maranta*, we find ourselves compelled, by a concurrence of circumstances, which we consider as irresistible, to transfer it to the proximate genus *Phrynium*.—Our principal reasons for this are founded on the stigma, an organ in this section of Monandrian plants of the first importance in deciding on their botanical character, and which in *Maranta* terminates the revolute style with a triangular or three-lobed orifice, but in *Phrynium* is placed below the truncate termination of the style, with an orbicular coriaceous margin. To this we may add the presence of the peculiar winged bracte immediately inclosing the flower, which is not found in *Maranta;* but the most striking characteristic, and by which we conceive the propriety of our decision is fully confirmed, arises from the seed-vessel, which in Phrynium is a three-celled capsule, inclosing three oblong angular seeds, but in Maranta is a berry-like fruit, inclosing one seed only; a distinction which we consider as ascertaining the difference between these two genera beyond all possibility of doubt.

We may further observe, that our arrangement does not admit of the genus *Calathea,* the proposed species of which we conceive properly belong to *Phrynium.*

The *Phrynium Zebrinum* is a native of the Brazils, and was introduced into this country in 1815. A plant of it was sent from London by Mr. John Hunneman, in 1823, to the Botanic Garden in Liverpool, where it annually produces its flowers, but has not yet ripened its seeds.

REFERENCES.

1 & 2. Front view and reverse of the winged bracte immediately inclosing the flowers.

3. Exterior floral bracte.

4 & 5. Interior floral bractes.

6. Intire flower.

7 & 8. The two sections of the upper lip of interior limb of corolla.

9. Exterior limb of corolla.

10. Filament, anther, style and stigma.

11. Calyx.

Phrynium violaceum

PHRYNIUM VIOLACEUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

Gen. Char.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma simple, circular; capsule three-celled; seeds three.

Spec. Char.—Scape bursting from the petiole, erect, jointed; spike capitate, imbricate; outer bractes circular, green, striate, each containing a pair of violate-coloured flowers; leaves broad-ovate, inæquilateral, pointed at the apex, strongly nerved.

Syn.—Calathea violacea. *Bot. Reg.* No. 961. *(Corr.* 962.)

Calathea violacea. *Loddiges, Bot. Cab.* 1148.

DESCRIPTION.

Root with strong fibres penetrating deep into the earth, and terminating in large pendulous tubers of a farinaceous quality, resembling arrow-root; stem none; petioles rising immediately from the root, from 18 inches to two feet high, deeply channelled on one side, terminating next the leaf in a pallid ganglion, about an inch in length, and slightly pubescent above; leaves ovate, acute at the apex, strongly nerved, smooth on both sides, very inæquilateral, dark green above, glaucous below, and purpurescent when young; spike bursting from the middle of the petiole, capitate, ovate, imbricate; outer bractes foliaceous, broad-ovate, green, slightly marcescent towards the apex; interior opposite bracte quadriform, winged, membranaceous, with several smaller, interior, imbricate, glumaceous, diaphanous bractes; tube of the corolla slender, about an inch in length, expanding in a double limb; outer limb in three sections, equal, ovate, violet colour; inner limb bilabiate; upper lip in two sections, one of them hooded, irregular, with a projecting appendage or hornlet a little below the apex, membranaceous, diaphanous; the other lanceolate, acute, violet colour; lower lip broad-ovate, slightly bifid at the apex, deep violet; anther ovate, attached by a short subulate filament to the hooded section of the upper lip of the inner limb of the corolla; style tubular, revolute, connate with the upper lip; the relative position of the anther and style seem to vary according to the state of the flower, before, during, or after, impregnation; stigma a circular orifice, depressed; germen three-celled; three seeds.

OBSERVATIONS.

This plant in its habit, size, and general appearance, bears a nearer resemblance to the *P. capitatum* of the East Indies, *(Roxb. in Asiat. Res.* vol. xi. p. *325. Flor. Ind.* v. i. p. 9.) than to any other species yet discovered in the western world. It was imported from Rio Janeiro in 1825, by the late Mr. W. Ross, of Stoke Newington, and has already been published in the two respectable works before referred to, under the name of *Calathea;* a genus which we cannot admit, without excluding the prior established one of *Phrynium,* altogether.

The plant from which our drawing was taken, was obligingly communicated by Messrs. Loddiges, to the Botanic Garden at Liverpool. There is reason to believe that the large tubers attached to the roots, are of a nutricious quality, and might be obtained in great abundance; those here represented having been produced in a very small pot.

Messrs. Loddiges (whose skill as cultivators of exotic plants is well known,) recommend that this plant should be constantly preserved in the stove, and should be potted in loam and sandy peat; to which we beg leave to add, that we consider the greater part, if not the whole of the genus, as aquatics, and consequently in the Liverpool Garden the pots are kept continually in water.

REFERENCES.

1. Exterior bracte.
2. Opposite carinate or quadriform bracte.
3. Intire flower.
4. Calyx.
5. Tube of the corolla.
6. Outer limb of corolla.
7. Lower lip of interior limb of corolla.
8. Upper lip of interior limb, with the filament, anther, style and stigma.
9. The same in a different position, magnified.
10. Style and stigma, magnified.

2 Phrynium Allouya.

PHRYNIUM ALLOUYA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma a circular membranaceous orifice; capsule three cells; seeds three, perforated.

SPEC. CHAR.—Leaves radical, on long petioles, ovate-lanceolate, strongly nerved, very unequally divided by the mid-rib; scape short, rising from the base of the leaves; inflorescence capitate, imbricate; exterior bractes lozenge-shaped; flowers white.

SYN.—Allouya, foliis cannacori, radicibus tuberosis. *Plum. MS. Hist. 5. 35.*

Maranta Allouya, foliis amplis, ovato-rotundatis, scapo nudo, capitulo folioso, variegato. *Aubl. Guian.* i. 3.

Maranta Allouya, foliis radicalibus, ovato-lanceolatis, petiolatis, nervosis; spica ovata pedunculata terminali. *Jacq. Fragmenta,* p. 53. *n.* 174. *tab.* 71. Curcuma Americana, *Lamarck Enc.* ii. p. 228. Maranta Allouya, Radix ovata, non acris, caulis 2–3, folia cannæ, bracteæ viridi alboque variæ, flores albi. *Martinica, Domingo. Roëmer & Schultes,* i. 15, 16.

Maranta Allouia, lateral tufted arrow-root. *Smith, in Rees' Cyclop.*

DESCRIPTION.

Root a large ovate bulb, with several globose or ovate tubers attached by strong fibres; leaves radical, on long petioles, ovate-lanceolate, inæquilateral, strongly nerved; scape rising from the sheath of a floral leaf near the base, short, simple, bearing a capitate spike; outer bractes lozenge-shaped, with pale membranaceous margins, imbricated; opposite bracte angular, carinate, with wings on the outer angles, each series of bractes containing two flowers; calyx superior, of three leaflets, equal; corolla tubular, with a double limb; outer limb of three small ovate equal segments; inner limb bilabiate; upper lip antheriferous, hooded; lower lip deeply bifid, lobes ovate; flowers a pure white; anther attached to the margin of the upper lip or filament by a short subulate process; style connate with the filament and anther, tubular, revolute, truncate; stigma an orbicular orifice; capsule three cells; seeds three.

OBSERVATIONS.

From its radical habit, capitate inflorescence, and tuberous farinaceous edible roots, it is not surprising that the French botanists have given to this plant the name of the *American Curcuma;* although in the essential characters of the two genera there appears not to be the least resemblance. From the time of Aublet this plant has been referred to *Maranta,* but the nearer examination of the parts of fructification, which later discoveries have afforded, has enabled us at length to refer it to its proper station in the Linnæan system.

The plant from which the drawing of the root in the present figure was taken, has been for some years in the Botanic Garden at Liverpool, but not having yet flowered, we have been obliged to have recourse to a specimen brought from the island of St. Vincent, by Charles S. Parker, Esq. who found it flowering there in the month of August 1824, at a place called *Bel air,* and who informs us that this species, or one very nearly allied to it, is cultivated in Guadaloupe, under the name of *Moustache de Barbade,* where it is said to be prepared in the same manner as arrow-root.

REFERENCES.

1. Bractes expanded, showing two young unopened flowers.
2. Exterior floral bracte.
3. Secondary bracte.
4. Opposite angular winged bracte.
5. A young flower before expansion, the filament, anther and style connate.

Phrynium [illegible]

PHRYNIUM MYROSMA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma orbicular; capsule three-celled; seeds three.

SPEC. CHAR.—Spike flowering from the petiole, drooping; bractes lozenge-shaped; leaves lanceolate-acute, glaucous below; petioles decurrent, with a marcescent margin; ganglions slightly marked with a few fine deflexed hairs.

SYN.—Myrisma, 120. *Nova. Linn. Pl. Surin.* 5. *Amæn. Ac.* v. viii. 251.

Myrosma cannæfolia. *Lin. Supplem.* 80, excluding the synonym.

Myrosma cannæformis. *Willd.* 1. 13. (excluso synonimo Rheedii.)

Myrosma cannæfolia. *Sir J. E. Smith, in Rees' Cyclop.*

Myrosma cannæformis. *Roemer & Schultes*, 1. 18.

Myrosma cannæfolia. *Sprengel*, 1. 9.

DESCRIPTION.

Root perennial, tuberous, with numerous fibres; stem herbaceous, from one to two feet high; leaves alternate, lanceolate-acute, inæquilateral, 3–5 inches long, 1–1¼ broad, finely nerved, bright green above, glaucous below; petiole decurrent, winged, marcescent on the margin, ganglions half an inch in length, dark green, slightly villous, with deflexed hairs; spike bursting from the floral petiole; peduncle about an inch long, supporting an imbricated, drooping spike or catkin, composed of 8 or 10 floral bractes; exterior bractes lozenge-shaped, each containing two flowers; opposite interior bracte carinate, or quadriform, with decurrent wings at the exterior angles; calyx of three lanceolate leaflets or segments; corolla tubular; exterior limb of three segments, equal, intire, white; interior limb bilabiate, white; upper lip in two segments, equal, intire; lower lip ovate, white; filament petal-like; anther attached to the margin of the filament by a short subulate pedicel; style tubular, revolute, truncate towards the apex; stigma a circular compressed orifice; capsule three-celled; seeds three.

OBSERVATIONS.

The plant of which we have here, for the first time, published a figure, is of considerable importance in the history and definition of Scitaminean Plants, as it enables us to clear up a doubt which we had long entertained, as to the propriety of retaining amongst them the genus *Myrosma*, which was founded by Linnæus on the present plant. In order to show the reasons that have induced us to exclude that generic appellation altogether from our present arrangement, it will be necessary to enter upon the subject somewhat more at large.

That Linnæus was well acquainted with the present plant is certain, a specimen of it still existing in his Herbarium, in the possession of the learned President of the Linnæan Society at Norwich. In constituting it the type of a genus, Linnæus appears to have acted strictly up to his own principles; and although in referring to the figure in Van Rheede, (*Hort. Mal.* xi. *tab.* 34. the plant now called *Phrynium capitatum,)* he was mistaken in the species, he was correct with respect to the genus; and if as much had been known then, as is now the case, respecting these plants, they would doubtless have been all designated by the name of *Myrosma*, and the establishment of a genus by the name of *Phrynium*, would have been unnecessary.

It appears, however, that Willdenow, not aware that the *Myrosma* of Linnæus, and the *Naru-killa* of Van Rheede, were generically allied, thought proper to establish a new genus from the latter plant, by the name of *Phrynium;* to which subsequent Botanists have conformed; and in the *Flora Indica* of Dr. Roxburgh, six species are described under that name. The discoveries which have recently been made in the tropical climates of America, have greatly increased that number.

The present plant flowered for the first time, we believe, in England, in the present year, (1826) in the collection of Mr. J. H. Masters, Eden Nursery, Stoke Newington, who favoured the Botanic Garden in Liverpool with a plant of it in flower, which we have had an opportunity of comparing with a duplicate of that preserved in the Linnæan collection, now in the Herbarium of the Garden at Liverpool, and find them in every respect to agree. That our plant is decidedly a *Phrynium,* as that genus is now constituted, there cannot exist a doubt. Independent of its general habit, which to a person acquainted with this tribe, distinguishes it at first sight, the parts of fructification, its glumaceous inflorescence, and carinated quadriform bracte, fully confirm the idea. As a species it is sufficiently characterized by its drooping spike, its lozenge-shaped bracte, and its ganglions with deflexed hairs, without reverting to further particulars.

It is observable, that although Willdenow has described this plant as *Myrosma cannæformis,* he has called it "*Genus affine Phrynio,*" an observation which has been repeated by subsequent Linnæan systematic Botanists; but the most accurate account of it is given by Sir J. E. Smith, in the article *Myrosma,* in the xxivth vol. of Rees' New Cyclop. where it is described from the Linnæan specimen in his own possession, and which we shall here give, that the reader may compare it with our present figure. "Stem herbaceous, rather than shrubby, clothed in the upper part with fine deflexed hairs; radical leaves several, ovate, acute, intire, three or four inches long, smooth, with one rib, and numerous fine, oblique, transverse veins, as in the rest of this natural order; footstalks erect, broad, sheathing, striated, three inches long, suddenly contracted at the top into a hairy knob, close to the leaf. At the summit of the stem is a larger leaf, from within whose much shorter, sheathing footstalk, springs the flower stalk of the same length, bearing a simple drooping spike of 8 or 10 flowers, whose broad, pale, imbricated bracteas resemble the catkin of the hop. Each of these is about as long as its corresponding flower, and is accompanied by a smaller and narrower internal bractea; the corolla seems to be white or yellowish."

This description fully agrees with the living specimen now before us, except in the stem being clothed in the upper part with fine deflexed hairs. The stem, it must be observed, is no other than the petiole of the flower, and the hairs above described are probably those on the knob or ganglion, at the summit next the leaf, which perfectly agree in being deflexed; the remainder of the plant is entirely smooth.

We are further informed by Sir J. E. Smith, that this was one of the plants which made a part of the Surinam collection, preserved in spirits, presented to Linnæus by King Gustavus III. "Linnæus named it *Myrosma,* from μύρον, a fragrant balsam, and ὀσμὴ, a scent, rather supposed perhaps from its natural affinities, than perceptible in the dried specimen, or discoverable in any thing we can find of its history. Linnæus first wrote it *Myrisma,* from μύρισμα, anointed with balsam, or unguent." Although the name of *Myrosma* can now be no longer retained, we may observe, that Linnæus displayed his usual sagacity in referring the present plant to the genus which has since been denominated *Phrynium;* and that if Willdenow had been sufficiently aware of this, the genus now called *Phrynium,* would have been denominated *Myrosma.*

REFERENCES.

1. Outer bracte.
2. Opposite carinate winged bracte.
3. Filament and anther, style and stigma, natural size.
4. The same magnified.

Phrynium cylindricum.

PHRYNIUM CYLINDRICUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma simple, orbicular; capsule three-celled; seeds three.

SPEC. CHAR.—Spike rising from the petiole, cylindrical, erect; outer bracte heart-shaped, reflexed at the apex, producing flowers in pairs; leaves broad-ovate, inæquilateral, slightly mucronate at the apex, strongly nerved; flowers tubular, pale straw-colour.

DESCRIPTION.

Root tuberous; plant three feet high; stem formed of the sheathing foot-stalks of the leaves; the true petiole 6–8 inches long, round, smooth, terminating next the leaf in an almost black or dark purple ganglion, an inch long or upwards, with a few scattered hairs on the upper side; leaves large, oblong-ovate, very inæquilateral, strongly nerved, mucronate at the apex, mid-rib green above, slightly coloured below; scape rising from the sheathing of the flowering petiole, round, hairy for two or three inches above the petiole, terminating in a regular, cylindrical spike, 5–6 inches long; outer bracte heart-shaped, pale green, smooth, reflexed and slightly crenulate at the apex; opposite winged or carinate bracte broad-ovate, pellucid; inner bractes diaphanous; inflorescence glumaceous; flowers rising in pairs; calyx of three lanceolate leaflets, pellucid, erect, converging, half the length of the flowers; tube cylindrical, upwards of an inch in length, expanding into a double border; outer border in three ovate, equal sections; inner border with a double lip; upper lip hooded, irregular, covering the style; lower lip antheriferous, supporting the anther on a short filament; style tubular, truncate at the apex; stigma simple, orbicular, smooth; capsule three-celled; seeds three.

OBSERVATIONS.

This plant, which in its general habit and appearance, bears a strong resemblance to a *Curcuma*, was introduced from the Brazils by Richard Harrison, Esq. at Aighburgh, near Liverpool, who presented a fine specimen of it to the Botanic Garden there, where it flowered at the end of February 1827, and is now, we believe, figured, named, and described for the first time.

It is impossible to contemplate, without the greatest pleasure, the beautiful uniformity which prevails in the generic characters of this very extensive genus, and at the same time to observe the infinite diversity which distinguishes the species in their varied characters and modes of inflorescence, particularly in the conformation of their bractes. Such has been the influx of these plants of late from the tropical climates of America, that it is probable they will, ere long, become the most numerous of all the tribe.

REFERENCES.

1. Outer bracte.
2. Opposite carinate or winged bracte.
3. Interior bracte.
4. Floral bractes, inclosing two young flowers.
5. Germen, calyx and corolla.
6. Leaflets of the calyx.
7. Tube and outer limb of corolla.
8. Sections of outer limb of corolla.
9. Inner limb of corolla.
10. Upper and lower lip of interior limb of corolla.
11. Anther, style and stigma.

Phrynium setosum

PHRYNIUM SETOSUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma simple, orbicular; capsule three-celled; seeds three.

SPEC. CHAR.—Spike bursting from the petiole; spikes imbricate, concave below and convex above, hirsute; outer bracte cordate, apex elongated, setose on the outside, margin purple; interior bracte winged, or carinate, white; leaves lanceolate, inæquilateral; petioles and spikes entirely covered with dense bristles.

DESCRIPTION.

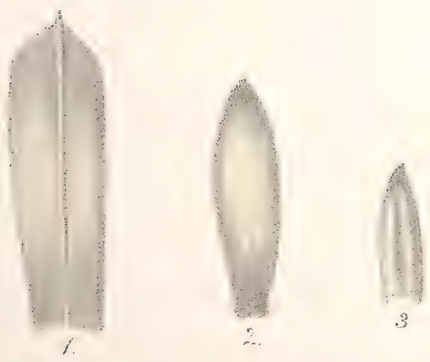
Root tuberous; plant two feet in height; stem none; petioles radical, channelled; green and rufescent, terminating next the leaf in a pale-green, transparent ganglion, about an inch long, which, being twisted, turns the leaf a little to one side; leaves lanceolate, 6–8 inches long, inæquilateral, smooth on both sides, apex cuspidate, base unequal, margin continuous; spike rising from nearly the middle of the petiole, three inches long, imbricate; concave below and convex above; spikelets alternate, lanceolate, setose, extremity of a purplish colour; outer bractes cordate, elongated at the apex, setose on the outside margin, purple inside, striated; opposite carinated bracte with four membranous wings running its whole length, white, pellucid; calyx superior, of three lanceolate membranous segments, hirsute, margin purple; outer limb of corolla of three ovate, membranous segments, hairy, pellucid; inner limb of corolla of three segments, the two lateral ones orbicular, pale blue; lip incrassated, hooded; filament with a detached, incrassated margin, upon which the anther is placed; style incurved; stigma simple, orbicular, smooth; capsule three-celled; seeds three.

OBSERVATIONS.

This very extraordinary plant was sent to the Botanic Garden at Liverpool, by Mr. Joseph Cooper, Botanic Gardener to Lord Milton, at Wentworth House, in Yorkshire, who we understand, had it from Edinburgh, under the name of *Maranta Secunda.* It is a native of the Brazils, and although not remarkable for its elegance, serves to add another variety to the very extensive genus of which it forms one of the most curious and interesting species.

REFERENCES.

1 & 2. Imbricated spike in different positions.
3. Entire flower.
4. Exterior bracte.
5. Inner carinated bracte.
6. Calyx.
7. Corolla.
8. Filament and anther.
9. Style and stigma.
10. The same separated.
11. The same in a different position.
12. Lip.



Phrynium Parkeri.

PHRYNIUM PARKERI.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style revolute, truncate; stigma a circular orifice, depressed; capsule three-celled; seeds three.

SPEC. CHAR.—Leaves radical, on long foot-stalks, broad ovate, elliptic, inæquilateral, with long ganglions; scape radical, erect, lanuginose; spike fasciculated, imbricated; general bractes ovate, striate, muricate.

DESCRIPTION.

Leaves radical, broad-ovate, smooth on both sides, elliptic, unequally divided by the mid-rib, which, on its approaching the apex, suddenly turns obliquely towards the point; petioles long, round, smooth, terminating next the leaf in a dusky ganglion, of about an inch in length; scape long, erect, round, intirely covered with dense wool or down; spike terminal; flowers numerous, in close, irregular, ascending fascicles; general bractes common to many fascicles, broad-ovate, mucronate at the apex; partial bractes biflorous, ovate, lanceolate, rigid, involute, acute, inclosing another membranous, foliaceous bracte or envelope, of a quadriform shape, directly opposed in situation to the former, and enclosing two flowers; calyx superior, of three lanceolate, unequal leaves, about half an inch in length; corolla tubular, tube about an inch long, downy, expanding at the apex into two limbs; outer limb in three segments, nearly equal, ovate; inner limb in three segments, the two upper ones equal, erect, expanding, the lower one, or lip, somewhat larger, ovate, intire; flowers yellow; filament an irregular, foliaceous petal-like process, from the margin of which rises a short pedicel, bearing an ovate-oblong anther; style connate with the filament, tubular, recurved and truncate at the apex; stigma a compressed, membranous ring, terminating the truncated apex of the style; capsule three cells, three seeds; the whole spike and flowers intirely covered with fine down.

OBSERVATIONS.

Although it is the object of this work to give only figures drawn from living plants, yet it is hoped, it will not be thought an unpardonable deviation from that plan, to exhibit the present figure, although drawn from a preserved specimen only. To this we have been induced, from the consideration, that this plant appears, as far as our researches have extended, to be intirely new to this country, not having been figured or described by any author; whilst at the same time it serves to extend our knowledge of this very singular genus, and enables us to mark more precisely the distinctive features between it and its nearly approaching genus *Maranta*.

From its general habit and appearance, this may be considered as one of the numerous tribe of large reed-like plants which grow in the moist woods, marshes, and banks of rivers in the tropical climates of America. Although we have examined many specimens of the flowers, we have not discovered any that contained the ripened seed; but their glumaceous inflorescence, interior, quadriform, winged bracte, and truncate annular stigma, sufficiently characterize its genus; whilst its singular foliage and lanuginose habit, enable us to distinguish it, with a peculiar degree of certainty, from all the other species.

The plant from which the present figure was drawn, was discovered in the island of Grenada, by Charles S. Parker, Esq. to whom we have great pleasure in inscribing it, as a testimony of the grateful sense we entertain of the obligations conferred upon us, by the valuable additions he has enabled us to make to the knowledge of Scitaminean Plants.

REFERENCES.

1. General bracte, enclosing a fascicle of flowers.
2. Partial bracte, inclosing two flowers.
3. Inner opposite quadriform bracte, peculiar to this genus.
4. Partial bracte opened, showing the opposite interior quadriform bracte, the calyx, and two flowers, one of which is frequently barren.
5. A single flower separated.
6. The flower magnified, showing the exterior and interior limb of the corolla.
7. The filament, anther, style and stigma separated, and more highly magnified.
8. The seed vessel magnified.

Phrynium Casupo

PHRYNIUM CASUPO.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma a circular membranous orifice, depressed; seeds three.

SPEC. CHAR.—Leaves radical, on long petioles, sheathed at the base, lanceolate, ovate, inæquilateral, with a dusky ganglion; scape rising from the sheath of the leaves, very long, foliaceous at the summit; spike bursting from the petiole of the upper or floral leaf, oblong, imbricate; outer bractes large, broad, ovate, concave, coriaceous, of a dusky brown; flowers yellow.

SYN.—Bermudiana amplissimo folio. *Plum. Hist.* v. p. 21, 22.

Maranta casupo, v. cachibou. *Jacq. Fragm. tab.* 63—69.

Calathea discolor. *Meyer, Fl. Essequibon.* p. 7.

Maranta casupo. *Roëmer & Schultes.* v. i. p. 16.

Maranta cachibou. *Id.* v. i. p. 17.

DESCRIPTION.

Plant from 12 to 14 feet high; leaves radical, long-petioled, 2–3 feet long, broad-ovate-lanceolate, smooth on both sides, green above, whitish and powdered beneath; petioles sheathed at the base, ganglionated next the leaf; scape rising from the sheath of one of the radical leaves, erect, smooth, producing from its summit a series of secondary or floral leaves, ovate, inæquilateral, with vaginated or flower-bearing petioles; spike oblong, imbricated, pedicellate, bursting from the floral sheath of the petiole; inflorescence glumaceous; outer bractes broad-ovate, carinate, imbricate, coriaceous, biflorous; opposite bracte quadriform, angular, membranaceous, winged at the exterior angles; an intermediate ligneous bracte between every two flowers, narrow, linear, erect; inner bractes ovate; calyx superior, of three lanceolate leaves, hirsute; tube of the corolla cylindrical, villous, terminating in a double limb; outer limb in three lanceolate sections, equal, a greenish yellow; inner limb bilabiate, upper lip in two divisions, one ovate, bearing the anther on its margin, and forming the proper filament, the other irregularly bifid, hooded, protecting the style and stigma; lower lip broad-ovate, deeply bifid; lobes obtuse, crenate, yellow; anther ovate, grooved, terminating in a small recurved point, and attached to the margin of the filament by a short subulate process; style tubular, revolute, truncate at the apex; stigma a simple, cylindrical, membranous orifice, varying in its relative position to the anther according to the state of fructification; capsule three-celled, three-valved; seeds three, oblong, angular, perforated with cavities within.

OBSERVATIONS.

Although this plant was figured upwards of a century ago by Plumier, amongst his inedited drawings, and has since been the object of anxious inquiry to several eminent botanists, yet the essential parts of its fructification, which alone can determine its genus, have not hitherto been analyzed and described with that accuracy which is indispensable, before we can assign to it its proper station amongst the plants of the order to which it belongs. The figures of Plumier occupy two sheets, (*Hist.* 5. 21 and 22,) the first representing the intire plant on a diminished scale, the second the general inflorescence and leaf, of their natural size,

together with a capsule and seed. With these our specimens have been carefully compared, and we have no doubt in considering them as the same plant, to which Plumier gave the name of "*Bermudiana amplissimo folio.*"

Upwards of a century after the death of Plumier, dried specimens of this plant were brought to the Imperial Garden at Schonbrunn, and were figured by Jacquin, in his *Fragmenta (tab. 63, fig. 4,* and again, *tab.* 69,) under the names *Maranta Casupo* and *Maranta Cachibou,* being only a different pronunciation of the same appellation; but these figures throw little more light on the subject than those of Plumier, the condition in which he found the flowers being such as not to enable him to define the essential parts of their fructification. "*Hos corrugatos,*" says he, "*valde teneros, cum genetalibus confusis, non potui ullo artificio explicare, astant etiam duo semina.*" From which latter circumstance we may however conclude, that it could not have been a *Maranta,* the character of which is a berry-like capsule, with a single seed.

It was in the extensive collection of Sir J. E. Smith, P.L.S. at Norwich, in the month of November 1823, that I had first the pleasure of observing native specimens of the spikes of the present plant, and of examining them with all the advantages derived from the experience and judgment of that distinguished botanist; but although we made numerous attempts to unfold the dried flowers by immersion, &c. we were compelled to assent to the statement of Jacquin, and to acknowledge, that the parts were so intermingled and shrivelled, as to render their separation impracticable. Our labour was however, in some degree repaid, by our discovering that each capsule contained *three* oblong seeds, resembling that given by Plumier, thereby confirming us in the idea that this plant could not properly be referred to the genus *Maranta.*

In the month of August 1824, we received at the Botanic Garden in Liverpool, from Charles S. Parker, Esq. then on a visit to the island of Trinidad, the floral branch and leaves of the present plant, with the intire spike and capsules of the same, each capsule containing three seeds. These were accompanied by specimens of the flowers preserved in spirits, which, being carefully expanded and examined, displayed the parts of fructification in the most perfect state, and exhibited indisputable proofs of its exact accordance in every respect with the genus *Phrynium,* as established by Willdenow upon the *Phrynium Capitatum,* the proper type of the genus, and confirmed by many other species given in the present work.

REFERENCES.

The small figure of the intire plant, is a reduced copy from the drawing of Plumier, exhibiting its general habit and mode of inflorescence; our specimen containing only the upper or flowering branch.

1. Outer bracte, biflorous.
2. Opposite angular winged bracte.
3. Exterior and winged bractes, in position.
4. Pair of interior floral bractes to each flower.
5. Erect, ligneous spatulate bracte, between the two flowers.
6. Calyx and intire flower.
7. Upper and lower lip of interior limb of corolla, with the anther, style and stigma.
8. Anther, style and stigma, after impregnation.
9. Anther, as attached to the filament.
10. Style and stigma detached.

The three last figures slightly magnified.

11. Seed vessel.
12. Ditto opened, and showing the three cells.
13. Seed.
14. Section of the seed.

Thrynium Stipheum

PHRYNIUM ELLIPTICUM.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached to the margin of the filament; style tubular, revolute, truncate; stigma a circular orifice, depressed; capsule three-celled; seeds three.

SPEC. CHAR.—Leaves on long foot-stalks, elliptical, inæquilateral, ganglionated, oblique at the apex; scape rising from the base of the leaves; spike terminal; flowers in a loose irregular panicle; floral bractes ovate, involute; spatulate bracte common to two flowers.

SYN.—Maranta spicata, foliis oblongis, sub-falcatis caulenudo, floribus spicatis. *Aublet Guian.*

Maranta spicata. *Smith, in Rees' Cyclop.*

Maranta spicata. *Roëmer & Schultes,* i. 16. *sp.* 15.

DESCRIPTION.

Roots fibrous; leaves radical, ovate-oblong, unequally divided by the mid-rib, oblique at the apex, towards which the mid-rib makes a sudden turn; petioles long, round, with a pallid ganglion; scape radical, simple, long, erect; spike terminal, in a loose panicle; inflorescence glumaceous; outer bractes ovate, involute, green, each containing two flowers, between which is found another bracte, erect, narrow, spatulate, coriaceous, upwards of an inch in length; interior bracte opposite to the exterior, quadriform, or angular, with a membranous wing at each angle; flowers in pairs, with a proper bracte to each flower; pedicels short; germen ovate; calyx superior, of three green leaflets; corolla tubular, extending a little beyond the exterior involute bracte, expanding into a double limb; outer limb in three lanceolate sections, equal; inner limb bilabiate, the upper lip hooded, irregular, bearing on its incrassated margin the anther, attached by a short subulate filament; lower lip ovate, simple; flowers pale straw colour; style tubular, revolute, truncate at the apex; stigma a simple, circular orifice; seed a rugose, three-lobed, three-celled capsule, inclosing three oblong, angular, perforated seeds.

OBSERVATIONS.

The first account we have of this plant is by Aublet, who found it in a boggy forest in Guiana, and has described it under the name of *Maranta spicata.* From his herbarium, which came into the hands of Sir Joseph Banks, a leaf was given by Sir Joseph to the younger Linnæus, who has, in his herbarium, now in the possession of Sir J. E. Smith, P.L.S. accompanied it with a rough drawing also of the spike of flowers, and a note in Swedish, saying, "He had seen four leaves, all of the same strange shape."—*Sir J. E. Smith, in Rees' Cyclop.* The most striking particularity of this plant is found in its singularly formed leaf, which is accurately described by Sir J. E. Smith, as "about a foot long, smooth and shining, with numerous principal, as well as intermediate transverse veins; the base is rather unequal, and the two halves of the leaves upwards much more so; one margin being curved, the other straight, the mid-rib running up perfectly straight, till it reaches the former margin, when it turns suddenly into the very short lateral or oblique point." Its long ligneous clavate bracte between every pair of flowers, noticed also by Sir J. E. Smith, it has in common with *Phrynium Casupo,* and perhaps with some other species.

In withdrawing this plant from the genus *Maranta,* where it has hitherto remained, we feel ourselves fully justified by its glumaceous inflorescence, its angular winged bracte, peculiar to *Phrynium,* its simple

orbicular stigma, and its three oblong angular seeds; characters which it is impossible to mistake, and which will, it is hoped, serve to clear up one of the last and greatest difficulties which has hitherto retarded the knowledge of this portion of Scitaminean Plants.

For the opportunity of accomplishing this object, we are indebted to C. S. Parker, Esq. who gathered many specimens of both the flowers and leaves of this plant in the year 1823, on the banks of the Pomeroon River at Essequibo. The figure in the present drawing represents a young plant intire, of the natural size; the leaf is that of a full grown plant, selected as a medium size from numerous specimens.

To this plant we should probably have given the name of *Phrynium spicatum*, thereby retaining the specific appellation, had not that denomination been before applied by Dr. Roxburgh, in his Flora Indica, (vol. i. p. 5.) to a different species of *Phrynium*. We have therefore named it *Phrynium ellipticum*, from the singular form of its leaves, which are more accurately described by that appellation than those of almost any other plant with which we are acquainted.

REFERENCES.

1. A pair of flowers, showing the exterior and interior bractes common to both, the clavate bracte, the interior partial bractes, the two flowers, one expanded, the other inclosed in its sheath, with their respective pedicel, germen, and superior calyx, the tube of the corolla expanding into its outer and inner limb, the upper lip of the inner limb, antheriferous, the anther with its pedicel, the truncate style and stigma, and the opposite lower lip.
2. The binate unexpanded flowers, with the erect coriaceous spatulate bracte, common to both.
3. The exterior floral bracte.
4. The opposite angular winged bracte.
5. The germen and calyx.
6. The germen, style and stigma.
7. The stigma magnified.
8. The rugose capsule.
9. The same opened, showing the cells.
10. The three seeds.

Thalia geniculata

THALIA GENICULATA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached by a subulate process to the margin of the filament, or upper lip of the corolla; style tubular, revolute; stigma appendiculate; seed single.

SPEC. CHAR.—Stem jointed, ramose; leaves lanceolate-acute, inæquilateral, midrib oblique; flowers in panicles, on long zig-zag foot-stalks; floral bractes of two unequal scales, permanent, each enclosing two flowers and two seeds.

SYN.—Thalia geniculata. *Lin. Willd.* i. 15.
Thalia geniculata. *Sir J. E. Smith, in Rees' Cyclop.*
Thalia geniculata. *Roemer & Schultes,* i. 17.
Thalia geniculata. *Sprengel Syst. V.* v. i. p. 8.

DESCRIPTION.

Plant from 4 to 6 feet high, rising with several strong fruticose stems, jointed at the divisions of the branches, and furnished at each joint with several long, erect, permanent spear-shaped bractes; leaves from one to two feet long, lanceolate-acute, terminating in an oblique irregular point, towards which the mid-rib makes a sudden turn; petioles about half the length of the leaf, with a short swelled ganglion next the leaf; flowers in fascicles; pedicels in a zig-zag form, having a floral bracte at every joint, of two irregular scales, each including two florets, with irregular partial bractes, inferior, permanent; calyx none, except a ring of scattered bristles or hairs surrounding the base of the corolla; corolla monopetalous, with a double limb; outer limb in three nearly equal, ovate sections, white, finely striated with oblong, violet spots; inner limb in two lips; upper lip erect, ovate, hooded, united towards the base with the proper filament, which disengages itself above, and supports the anther; lower lip larger, ovate, crenulate, violet colour; style connate with the tube of the corolla, longer than the filament, tubular, revolute; stigma ringent, extending below the mouth into a long, flat, membranous appendage, slightly notched at the apex; seed a regular, ovate, hard berry, the albumen of which is pierced with cavities for the embryo, in the same manner as *T. dealbata.*

OBSERVATIONS.

The difficulties which have attended the investigation of this plant have given it a degree of interest which would scarcely have been conceded to it, on account of either its beauty or its utility. To examine the plant in a living state, has fallen to the lot of but few botanists.

For the present specimen we are indebted to the kindness of Charles S. Parker, Esq. who, amongst other plants, either new or of considerable rarity, given in this work, has favoured us with specimens of this plant, the spikes, flowers and fruit being preserved in spirits, so as to admit of the most full and satisfactory examination. From these the present figure and description are given; and as the seeds brought by Mr. Parker have already vegetated in the Botanic Garden at Liverpool, we hope shortly to be afforded an opportunity of correcting any errors, or supplying any deficiencies, in our present description.

As a genus this plant is immediately distinguished from *Maranta* and *Phrynium* by its very peculiar stigma, consisting of a long appendage or membrane, protruding from the mouth of the stigma, and generally lying opposite to, and receiving the pollen from, the anther; and also by its single, regular, ovate, perforated seed.

As a species it is characterized by its wild and irregular growth, its smooth elliptic leaves, the numerous bractes from its jointed stem, its 2–3-florous bractes or scales producing a succession of small violet-coloured flowers, each, in decay, crowning with a convolute scroll, a single seed till ripe. These seeds are rather more oblong in shape, and smaller in size, than those of *T. dealbata*, and are perforated in a similar manner.

The present plant was gathered by Mr. Parker, on the banks of trenches at Coffee-Grove, in Demerara. Its growth there is from four to five feet high.

REFERENCES.

1. Two flowers enclosed in the floral bractes.
2. The two flowers on their pedicels.
3. Germen, outer limb of the corolla, upper lip of the interior limb, anther, style and stigma, in position.
4. Filament, anther, style and stigma, highly magnified.
5. Seed, with its permanent bractes.
6. Seed cut transversely.

Thalia dealbata.

THALIA DEALBATA.

MONANDRIA MONOGYNIA.

SECT. I. CANNÆ.

GEN. CHAR.—Anther single, attached by a subulate process to the margin of the filament, or upper lip of the corolla; style tubular, revolute; stigma appendiculate; seed single, perforate.

SPEC. CHAR.—Scape radical, simple; spike compound; floral bractes ovate, imbricate, biflorous; the stem and panicle covered with a farinaceous powder or meal.

SYN.—Thalia dealbata. *Sowerby, single plate,* 1794.

Thalia dealbata. *Smith in Rees' Cyclop.*

Peronia stricta. *Redouté Liliac. tab.* 342.

Thalia dealbata. *Bot. Mag. tab.* 1690.

Thalia dealbata. *Brown Prod. Flor. Nov. Hol.* 307.

Thalia dealbata. *Roemer & Schultes,* v. i. p. 18.

Peronia stricta. *Idem.*

Thalia dealbata. *Spreng.* i. 8.

DESCRIPTION.

Root perennial, tuberous; stem radical, central, from 4 to 6 feet high, cylindrical, simple; spike bursting from a large foliaceous bracte, compound, each fascicle being inclosed in a secondary bracte; leaves broad-lanceolate-acute, from 12 to 18 inches long, strongly nerved, smooth on both sides, twisted or revolute at the apex; petioles long, round, terminating next the leaf with a ganglionated joint; floral bractes imbricate, cordate at the base, acute at the apex, with each an opposite, smaller, concave bracte, inclosing two flowers; calyx of three lanceolate, purple leaflets; outer limb of corolla in three ovate sections, nearly equal, purple; inner limb in two lips, the upper one erect, of an irregular lunate shape, antheriferous, the lower one larger, deeply divided into two irregular mucronated lobes, of a dark purple colour; anther attached by a subulate process to the margin of the upper lip, ovate, grooved, yellow; style cylindrical, tubular, revolute; stigma ringent, with an appendage extending beyond the mouth, in a long membranous process or lip, slightly bifid at the apex; seed a hard ovate berry, perforated.

OBSERVATIONS.

A native of South Carolina, discovered by T. Millington, Esq. and introduced into this country by the late Mr. Fraser. The fine figure of it by the late excellent artist, Mr. Sowerby, delineated under the inspection of Sir J. E. Smith, first made this plant generally known. It has since been extensively cultivated as an aquatic in our Conservatories, of which it forms one of the principal ornaments. This plant has given rise to some observations in Mr. Brown's *Prodromus Pl. Nov. Hol.* p. 307, which will be found noticed in my preceding account of this genus.

REFERENCES.

1. Floral bracte.
2. Flowers in pairs.
3. Sections of exterior limb of corolla.
4 & 5. Upper and lower lip of interior limb.
6. Filament, anther, style and stigma, magnified.
7. Style and stigma magnified.
8. The same, more highly magnified.
9. Anther, style and stigma, before expansion of the flowers, highly magnified.
10, 11. Capsule.
12. Transverse section of the seed, showing the interior cavities.

Hedychium acuminatum.

HEDYCHIUM ACUMINATUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament long, slender, supporting the anther at its apex by a flexible ligament attached to the back; capsule three-celled; seeds numerous, arilled.

SPEC. CHAR.—Spike open, irregular; bractes one-flowered; filament shorter than the lip, somewhat recurved; lip narrow-ovate, deeply divided into two sections; sections acute.

DESCRIPTION.

Roots perennial, tuberous; stems herbaceous, erect, simple, compressed, from three to four feet in height; leaves bifarious, lanceolate, smooth on the upper and villous on the under side; spike erect, loose, terminal; rachis sub-triangular, and marked with pellucid white spots; common bractes cylindrical, smooth, mucronated; inner bractes cuneate, membranous; calyx cylindrical, trifid, smooth, sheathing the tube of the corolla about half its length; outer limb of the corolla of three linear segments, pale yellow at the apex, and orange at the base; inner limb of three unequal segments; the two lateral ones narrow, linear, somewhat undulated and caniculated at the base; the middle segment, or lip, bifid, lobes acuminate, white; claw caniculated at the base, and of a dark orange colour; filament shorter than the lip, recurved; anther double, lobes large, embracing the style; style long, filiform, supported at the base by two blunt processes; stigma beautifully ciliated; capsule green even when ripe, three-celled, three-valved, many-seeded, somewhat angular, compressed, retaining the outer and inner bractes as long as it remains on the stem, interior of the capsule a bright orange; seeds arilled.

OBSERVATIONS.

This plant was introduced from Napal by Dr. WALLICH, by whom specimens were sent in 1819, under the name of Hedychium Spicatum, but that appellation having before been applied to a different species, this was denominated Acuminatum, from the pointed sections of the lip, resembling a pair of shears. The living plant was afterwards sent by Dr. WALLICH to the Botanic Garden at Liverpool; where it flowered, towards the end of October, 1822, and produced its seeds, which were sown and vegetated. Although not so splendid as many of its congeners, it is a stately and beautiful plant, and its flowers are highly fragrant.

REFERENCES.

1. Germen, calyx, and corolla.
2. Germen and calyx separate.
3. Germen, style, stigma, and germinal processes.
4. Filament and anther.
5. Inner bracte.
6. Outer bracte.
7. Capsule, with the permanent bractes.
8. Seed-vessel open.

Hedychium Spicatum.

HEDYCHIUM SPICATUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back to the apex of the filament; filament grooved, embracing the style.

SPEC. CHAR.—Spike terminal, simple, loosely imbricated; outer bractes broad-ovate, hairy at the apex; filament shorter than the lip; lip deeply bifid; exterior segments of corolla erect; leaves alternate, linear-lanceolate.

SYN.—Hedychium spicatum. *Smith, in Rees' Cyclop.*
Hedychium spicatum. *Bot. Mag.* 2300.
Hedychium spicatum. *Hooker, Exot. Fl.* 1. 46.
Hedychium spicatum. *Loddiges' Bot. Cab.* 7. 653.
Hedychium spicatum. Spica elongata, oblonga, multiflora, squamis laxe imbricatis, obtusissimis, trifloris, limbi interioris laciniis lanceolatis, labello obovato, bilobo, subsessili, stamen concolor, longitudine subæquante. *Wallich, in MS.*

DESCRIPTION.

Roots tuberous, running horizontally near the surface, with long succulent fibres; stem simple, herbaceous, three feet in height, erect, smooth, tinged with pink towards the base; leaves alternate, linear-lanceolate, 12–15 inches long, inæquilateral, smooth above, and downy underneath; petioles short, decurrent, with a hairy stipule or *ocrea;* spike terminal, simple, loosely imbricate, 6–8 inches long; fascicles 2–3 flowered; rachis smooth; outer bractes broad-ovate, hairy at the upper margin; inner bracte membranous, hairy at the apex, one to each flower; calyx tubular, sheathing the corolla half its length, trifid at the apex; tube of corolla 3–4 inches long; outer limb of three linear-lanceolate equal segments, erect, two of them immediately behind, and supporting the lip; inner limb of the corolla of three segments, two of them long, linear, equal, diverging at nearly right angles; lip broad, deeply divided into two lobes, erect; lobes ovate, obtuse, uniting in a short claw; filament strong, erect, shorter than the lip, grooved, embracing the style; anther bilobate, yellow; style filiform, tubular, supported at the base by two blunt yellow processes; stigma cup-shaped, compressed, beautifully ciliated with fine hairs; capsule three-celled.

OBSERVATIONS.

"Native of the borders of fields among the hills of Upper Napal, where it is called *Wohutty-swa,* and admired for its beauty and fragrance; the latter being, according to Dr. Buchanan, (now Hamilton,) of a very powerful kind." *Smith, in Rees.* Although this, according to the information of Dr. Wallich, (in MS.) "is the commonest of all the species," it does not seem to have been long introduced into the gardens of India, not being enumerated among the rest of the genus in the *Flora Indica* of Dr. Roxburgh. It is also necessary to state, in order to prevent mistakes, that the copper-plate engraving of a plant published by Dr. Wallich, under the name of *Hedychium spicatum,* has since been found by him to represent another species which he has denominated *H. trilobum,* the lip of which is trifid; but which I am not aware has hitherto been introduced into this country.

The H. spicatum, we believe, flowered for the first time in this kingdom, at Lord Milton's Conservatory, at Wentworth House, and the spike was sent by Mr. Cooper, his Lordship's Botanic Gardener, to Liverpool, for the use of this work. The plant at present in the Liverpool Garden, was sent by Dr. Wallich, from Calcutta.

We find from the Bot. Reg. No. 2300, that the *H. spicatum* "has been planted in the open border in the front of the stove and greenhouse at Mr. Kent's, at Clapton, where they stood the winter, and made stronger plants than what were housed;" but the specimen there figured, would not induce us to repeat the experiment.

REFERENCES.

1. Intire flower.
2. Exterior or general bracte.
3. Inner or proper bracte.
4. Calyx detached.
5. Germen, with its processes, style and stigma.

9 Hedychium flavum.

HEDYCHIUM FLAVUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament attached at the apex to the back of the anther; capsule three-celled; seeds numerous, arilled.

SPEC. CHAR.—Spike capitate, imbricate; filament the length of the lip; lip broad, deeply divided into two ovate lobes; leaves lanceolate-acute, terminating in a marcescent point, smooth above and downy below.

SYN.—Hedychium flavum. Wallich in Flor. Ind. vol. I. p. 81.

Curt. Bot. Mag. No. 2378.

DESCRIPTION.

Roots perennial, tuberous, running horizontally near the surface of the earth; stem simple, herbaceous, rufescent towards the base; leaves alternate, lanceolate-acute, with a long narrow twisted point, smooth on the upper surface, and villous beneath; sessile on their sheathing base, with a stipula or ocrea 1–2 inches long, deeply notched, and covered with soft brown hairs; spike terminal, simple, 5–6 inches long, compact, imbricated; common bractes coriaceous, oblong-ovate, finely ciliated towards the apex, 3–4 flowers in each; inner bractes membranaceous, notched at the apex, striated, one to each flower; calyx sheathing the tube of the corolla half its length; the apex trifid, downy; tube of the corolla upwards, of two inches long; outer limb of three linear segments, equal, narrow, reflexed; inner limb in three segments, two of them equal, opposite, elliptic-ovate; the third, or lip, larger, broad-ovate, deeply divided into two obtuse lobes; filament the length of the lip, grooved, embracing the style; anther double; style supported by two short blunt germinal processes, and embraced by the filament and anther, beyond which it projects with a funnel-shaped stigma, finely ciliated; germen a downy capsule, three-celled; seeds numerous, arilled; the flower is intirely yellow, and has a scent delightfully fragrant, resembling the jonquil.

OBSERVATIONS.

A native of Silhet; sent, in 1818, by Dr. CAREY, from Serampore, to the Botanic Garden, in Liverpool, where it flowered on the 22nd October, 1820.

REFERENCES.

1. Inner bracte.
2. Outer bracte.
3. Germen, with its processes, style, and stigma.
4. Intire flower.

Hedychium flavescens

HEDYCHIUM FLAVESCENS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached on the back to the apex of the filament; filament grooved, embracing the style.

SPEC. CHAR.—Spike terminal, capitate, imbricate, lower bractes broad, flat, obtuse, ciliated at the apex; upper bractes cylindrical, 2–3 flowered; filament scarcely the length of the lip; lip broad, bilobate; leaves villous beneath.

Hedychium flavescens. *Carey.*

DESCRIPTION.

Roots tuberous, spreading horizontally, with long stringy fibres; stem herbaceous, erect, 6–8 feet high, rubescent for a few inches at the base, compressed, slightly villous; leaves alternate, sessile, long-lanceolate, marcescent at the point, pale green, smooth on the upper surface, villous below, with a long ligulated pallid *ocrea*; spike terminal, erect, compact, imbricated, lower bractes ovate, obtuse, flat, ciliated at the apex; upper bractes cylindrical, 2–3 florous; calyx tubular, half the length of the tube of the corolla, villous; tube of corolla 3–4 inches long; outer limb in three equal, narrow, reflexed segments, yellow; inner limb in three segments, flavescent, the two lateral ones equal, broad, ovate, obtuse; lip large, broad, two-lobed; filament about the length of the lip, erect, grooved, embracing the style; anther large, double; style filiform, supported at the base by two blunt processes; stigma cup-shaped, margin ciliated, extending beyond the anther; germen villous, three-celled, flowers delightfully fragrant.

OBSERVATIONS.

This fine and very distinct species seems to hold a middle rank between *Coronarium* and *Flavum.* It was sent by Dr. CAREY, from Serampore, to the Botanic Garden in Liverpool, in 1821, and flowered there in October 1822. Another plant flowered about a month earlier in the same year, in Lord Milton's Conservatory, Wentworth House, Yorkshire.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Calyx and corolla intire.
4. Filament, anther, and stigma.
5. Germen, style, and processes at the base.

Hedychium Coronarium.

HEDYCHIUM CORONARIUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back to the apex of the filament; filament long, grooved, embracing the style.

SPEC. CHAR.—Spike capitate, imbricate; bractes broad-ovate, acute at the apex; tube of the corolla very long; lip orbicular, deeply bifid; filament shorter than the lip; leaves lanceolate.

SYN.—Lutisu Swa, *of the Nawars, or Original Natives of Napal. Smith.*

Gooruk-nadtah, also Dulala-champa of *the Bengalese. Roxb. Asiat. Res.* xi. 325.

Gandsulium. *Rumph. Amb.* vol. v. p. 175. *t.* 69. *fig.* 3.

Hedychium coronarium. *Koenig. in Retz. obs. Fasc.* iii. 78.

Hedychium coronarium. *Willd.* vol. i. p. 10.

Hedychium coronarium. *Curt. Bot. Mag.* 708.

Hedychium coronarium. *Smith, Exot. Bot. tab.* 107. p. 96.

Hedychium coronarium. *Roxb. Asiat. Res.* xi. 325. *Flor. Ind.* i. 9.

Hedychium coronarium. *Loddiges' Cab.* 51.

DESCRIPTION.

Root perennial, tuberous; stem simple, herbaceous, from 4 to 6 feet high, pink or rose colour at the base; leaves in two opposite rows, alternate, lanceolate, smooth on the upper surface and villous beneath, clasping the stem, and terminating with an erect membranous stipula; spike terminal, erect; bractes large, coriaceous, closely imbricated, forming an ovate cone — and each containing from 4 to 6 flowers, rising in succession; calyx tubular, bifid, sheathing the corolla about half the length of the tube; tube of the corolla very long, expanding into a large white flower, with a double limb; outer limb in three equal linear-lanceolate segments, declined; inner limb, or upper lip, of two elliptical, ovate, equal, undulated, segments, opposite to each other; lower lip broad, divided at the apex into two elliptic, ovate lobes; filament shorter than the lip, subulate, grooved, embracing the style throughout its whole length; anther attached at the back to the apex of the filament, bilobate; style slender, flexile, projecting a little beyond the anther, with two blunt processes at the base; stigma a ciliated cup; capsule three-celled, three-valved, oblong-ovate; seeds many.

OBSERVATIONS.

Notwithstanding the numerous species of this genus which have of late years been discovered, the *Coronarium* still maintains its rank, as well for its beauty as for the fragrance of its large magnificent drooping flowers, which induced Dr. Roxburgh, in his *Flora Indica*, to state that it was the most charming of all the plants of this natural order he had yet met with. "It is a native of various parts of Bengal and the neighbouring provinces; flowers during the rains, and the seeds ripen in the early part of the cool season." *Flor. Ind.* p. 9. "It is also very generally cultivated for ornament; the Malay women decorate their heads with the flowers, which they use also emblematically, according to the oriental manners, sending them to any young man whom they wish to reproach with inconstancy in love, perhaps because the duration of such flowers is so very transient." *Sir J. E. Smith, in Rees' Cyclop.* The same author observes, that Dr. Buchanan found this plant, or at least a pale yellowish variety of it, wild about the borders of fields among the elevated mountains of Upper Nepal. *Ibid.* It may, however, be doubted whether the yellow variety be not a different species, which will be found figured in this

work under the name of *Hedychium Flavescens;* unless it should be thought that this plant is a hybrid between Hedychium flavum and H. coronarium. The last mentioned plant has been long cultivated in this country, and was the only species known of the genus, and also the only one cited by Dr. Roxburgh, in his Dissertation on Monandrian Plants, in *Asiat. Res.* published in 1810. But since that time, the species discovered have been so numerous, as to constitute one of the most extensive genera of Scitaminean Plants, as the present work will sufficiently show. For these numerous and beautiful additions, we are chiefly indebted to Dr. Carey, of Serampore, and Dr. Wallich, of Calcutta, who have enriched the Botanic Garden at Liverpool with the greater portion of the plants of this genus here figured, and the latter of whom has furnished the author with a specific description of several other species now cultivated in the Botanic Garden at Calcutta.

This plant, like the rest of the genus, is peculiar to the more temperate climates of India, and has not, I believe, been found in its native state in any other quarter of the world. I have been told that it is grown for the beauty and fragrance of its flowers, in some of the islands in the West Indies, under the name of *Myrosma Cannæfolia*—a very different plant, which is now indisputably ascertained to be a *Phrynium.*

REFERENCES.

1. Intire flower.
2. Outer bracte.
3. Inner ditto.
4. Calyx.
5. Germen and processes, style and stigma.

Hedychium Maximum.

HEDYCHIUM MAXIMUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament attached at the apex to the back of the anther; capsule three-celled; seeds numerous, arilled.

SPEC. CHAR.—Spike capitate, imbricate; filament shorter than the lip; lip very broad, bilobate, outer bractes ciliate; leaves sessile, sheathing, broad-lanceolate, smooth above and downy beneath.

DESCRIPTION.

Roots tuberous, fleshy, running horizontally; stems strong, erect, herbaceous, 10–12 feet high; leaves alternate, sessile, broad-lanceolate, smooth on the upper side and downy below; spike terminal, erect, compactly imbricated; common bractes broad, ovate, obtuse, and ciliated towards the apex; inner bractes ovate, membranous, rufescent; calyx superior, of one leaf, downy, cylindrical at the base, but inflated and opening upwards, and inclosing the tube of the corolla about one-third of its length; outer limb of the corolla of three linear-lanceolate segments, equal, reflexed; inner limb of three segments, the two lateral ones broad, ovate, equal; lip very broad, notched at the apex, crenate or undulate; faux hairy; filament shorter than the lip, slightly tinged with pink; anther broad, two-lobed; style from the germen to the tip of the anther about six inches long; stigma funnel-shaped, compressed, ciliate; germen with two short blunt processes supporting the style, downy; capsule three-celled; seeds many, arilled.

OBSERVATIONS.

On a first view, this noble plant might be mistaken for a well-grown specimen of *Hedychium coronarium*, but will be found, on examination, to differ so materially as to prevent our considering it as even a variety of that species; although it may possibly be the plant referred to by Dr. ROXBURGH, in Flora Indica, vol. I. p. 10, as a variety found in some of the interior provinces. Besides its being a much larger growing plant, it is readily distinguished by its large ovate and ciliated bractes, its broader leaves, and, frequently, by a very singular lobe, or tongue, projecting from the centre of the lateral segments of the corolla, but not constantly found; to this it may be added, that in *Maximum* the germen, faux, and calyx, are downy; whilst in Coronarium these parts are all smooth.

A young plant of this species, about two feet high, was sent by Messrs. LODDIGES, of Hackney, on the 12th May, 1822, to the Botanic Garden, in Liverpool; where, by the 28th of August following, it had put out new stems from the root, and measured five inches in circumference near the base, and ten feet high, with leaves two feet long and eight inches broad; a rapidity of growth perhaps scarcely exceeded in its native climate.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. The intire flower, showing the occasional lingulate process from the centre of the lateral lobe of the corolla.
4. Germen and inflated calyx.
5. Germen, with its processes, style, and stigma.

Hedychium glaucum.

HEDYCHIUM GLAUCUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINIÆ.

GEN. CHAR.—Anther double, embracing the style, naked; filament long, slender, attached to the back of the anther; capsule three-celled; seeds numerous.

SPEC. CHAR.—Filament twice the length of the lip; spike slender; flowers alternating by threes; bractes one-flowered; lip deeply bifid, segments acute; leaves lanceolate-acute, equilateral.

DESCRIPTION.

Roots perennial, tuberous, horizontal, jointed; stems erect, smooth, 3–4 feet high; leaves alternate, lanceolate-acute, equilateral, intire, smooth on both sides, glaucous below; petioles short, extending upwards in a red stipule or ochrea; flowers alternating; spike slightly declined at the base; Rachis slender; outer bractes cylindrical, slender, smooth, except a small tuft of hairs at the apex, embracing the tube of the corolla; inner bracte pellucid; corolla with a double limb; outer limb in three equal long linear segments, reflexed; inner limb in three segments; the two lateral ones lanceolate-obtuse; equal, intire, expanding; the lower one, or lip, on a short claw, ovate, but deeply divided at the apex; segments acute; filament twice the length of the lip, the upper part and anther red; style slender, supported at the base by two projecting processes, and embraced by the groove of the filament and anther; stigma funnel-shaped, compressed, ciliated; flowers white.

OBSERVATIONS.

If the *Hedychium gracile* of Roxburgh, (Flora Indica, vol. I. p. 12.) be the *Hedychium gracile* of the plants of the Coast of Coromandel, fig. 251, it is a very different plant from that which is now figured, and to which we have therefore given the name of *glaucum*.—In the *gracile*, the filament is not longer than the inner limb of the corolla; in the *glaucum*, it is twice the length. In the former, the leaf is lanceolate-obtuse, or broader towards the point; in the latter, it is lanceolate-acute, or broader towards the base; in the former, it is represented as inæquilateral; in the latter, it is æquilateral; diversities too striking to permit us to consider them as the same species.

I am indebted to Dr. Wallich, for a dried specimen of a plant agreeing both in the shortness of its filament and the form of the leaf, as well as in the lip of the corolla, with the outline in Coromandel Plants, and which I conceive to be the *gracile* figured in that work.

The present small but elegant species flowered in Lord Milton's Conservatory, in October, 1822; and was sent by Mr. Cooper, his Lordship's Botanical Gardener, to the Botanic Garden in Liverpool.

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Hedychium villosum.

HEDYCHIUM VILLOSUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back to the apex of the filament; filament long, grooved, embracing the style.

SPEC. CHAR.—Spike erect; flowers irregular; bractes involute, tubular, villous; filament twice the length of the lip; anther small, heart-shaped, embracing the style.

SYN.—Hedychium villosum. *Roxb. Flor. Ind.* vol. i. p. 12.

Hedychium villosum, spica cylindrica, villosa, elongata, dense obsita fasciculis valde approximatis, trifloris, nunc conjugatis; bracteis ovalibus deciduis; calyce tubi longi corollæ dimidium superante; labello subsellili profunde bifido, laciniis linearibus; filamento longissimo, anthera minuta, sagittata; foliis oblongis, valde acuminatis. *Wallich, in MS.*

DESCRIPTION.

Root perennial, fleshy, stoloniferous, running horizontally near the surface of the earth, and sending down long cordate fibres; stem herbaceous, erect, from 6 to 8 feet high, invested in the sheathing of the leaves, and of a ferruginous red at the base; leaves broad-lanceolate, downy on the mid-rib and margin, ending in a filiform twisted point, alternate, short-petioled, with a ligulated stipule or *ocrea* of about an inch in length, embracing the stem, and, as well as the margins of the sheathing, of a dusky red, slightly covered with a tawny down; spike terminal, erect, loose, spreading from the rachis, from 6 to 10 inches long; rachis angular and villous; flowers in irregular fascicles, but alternating in upright rows; flowering bractes ovate, involute, apparently tubular, villous, *2–3* florous; inner bractes one to each flower, ovate, membranaceous; calyx cylindrical, obliquely trifid, villous; tube of the corolla long, slender, slightly villous; outer limb in three equal, linear, twisted pendulous segments of a yellowish green colour; inner limb of three segments, the two lateral ones standing at right angles with the tube of the corolla, long, narrow, linear, broader and bifid at the apex, pure white; lip standing on a short concave claw, divided nearly to the base into two oblong-ovate spreading lobes, undulate and declined or twisted at the apex; filament twice the length of the lip, bright scarlet; anther cordate, compressed, with a ligature running across the two lobes as if to bind them together; style filiform, pellucid, white, supported at the base by two subulate processes; stigma concave, green, slightly ciliated.

OBSERVATIONS.

A native of the mountains north-east of Bengal, from whence it was sent in 1815, by Mr. Matthew Robert Smith, Collector for the Botanic Garden at Calcutta, to Dr. Wallich, to whom we are indebted, at the Botanic Garden at Liverpool, for the plant from which the present drawing was made, together with a characteristically engraved figure of it, although on a diminished scale.

Dr. Wallich has also communicated another species under the name of *Hedychium tenuiflorum*, which resembles the present, as well in the deep-lobed, undulated lip, as in the small *sagittate* anther, but which he thinks very doubtful, and perhaps not distinct from *Villosum;* to which, as far as our observations have extended, the small cordate or sagittate anther is peculiar.

The chief diversity we have observed between our plant and that described in the Flora Indica, is in the downy margin and mid-rib of the leaves, and in the colour of the flowers, which in the Flora Indica are described as of a pale yellow colour, whilst in ours they are a pure white. It is observed by Dr. Wallich, that "the flowers of this species are less succulent than those of *H. coronarium* and *H. angustifolium*, and delightfully fragrant, even when dry." *Wallich, MS.*

REFERENCES.

1. Intire flower.
2. Outer bracte.
3. Inner bracte.
4. Germen and calyx.
5. Anther and stigma magnified.
6. Germen and processes, style and stigma.

Hedychium ellipticum

HEDYCHIUM ELLIPTICUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, terminal, attached on the back to the apex of the filament.

SPEC. CHAR.—Spike capitate, imbricate, fastigiate; outer bractes one-flowered, ovate, acute; flowers radiated, white; lateral segments of the inner limb of corolla elliptic; lip acuminate, slightly bifid at the apex; filament twice the length of the lip; anther scarlet; leaves broad-lanceolate, smooth on both sides, terminating in a purple stipule or ocrea, embracing the stem.

Hedychium ellipticum. *Buchanan (Hamilton) ap. Smith in Rees' Cyclop.* in loco.

DESCRIPTION.

Roots perennial, tuberous, running horizontally near the surface of the ground; stem herbaceous, from four to five feet high, smooth; leaves alternate, on short concave petioles, broad-lanceolate, sub-elliptic, of a thin texture, smooth on both sides, dark green above, and paler below; sheathing smooth, and terminating in a short, obtuse, emarginate stipule or ocrea of a purple colour; spike terminal, capitate, imbricate, fastigiate, flowering in a radiated whorl, ten inches in diameter; bractes one-flowered, ovate, lanceolate, acute, with a membranous margin; inner bractes cuneate, membranous; calyx tubular, sheathing the tube of the corolla one-third its length, bidentate, slightly villous at the apex; outer limb of the corolla in three equal, linear, revolute segments, pale yellow; inner limb with two lateral segments, elliptic-ovate, or cuneate, standing on long channelled claws, and rather longer than the lip, pure white; lip ovate, acuminate, bifid at the apex, standing on a strong channelled claw, pure white; filament more than twice the length of the lip, scarlet; anther very long, two-lobed, scarlet; style tubular, 6 inches long, supported at the base by two subulate orange-coloured processes, and terminating in a green, cup-shaped, ciliated stigma; germen villous.

OBSERVATIONS.

Our first notice of this beautiful, and as yet uncommon species of Hedychium, is from Dr. Buchanan, (now Hamilton,) who gathered it, July 26, 1802, at Naramhetty, in Upper Nepal, where it grows about the borders of fields among the mountains. *Sir J. E. Smith, in Rees's Cyclop.* No other Botanist, says Sir James, has ever observed this species, which would be as desirable an addition to our gardens as the *coronarium.*

Living plants have been received at the Liverpool Botanic Garden, from Dr. Wallich, at Calcutta, and from Mr. Brocager, at Hoogly, in Bengal; from the latter of which the present drawing was made.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Intire flower.
4. Filament and anther.
5. Germen, processes, style and stigma.

Hedychium Thyrsiforme.

HEDYCHIUM THYRSIFORME.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back to the apex of the filament; filament long, grooved, embracing the style.

SPEC. CHAR.—Filament twice the length of the lip; spike ovate, dense; bractes convolute, numerous, closely appressed, reflexed, lip long, linear, deeply divided into two lanceolate lobes.

SYN.—Hedychium thyrsiforme. *Smith, in Rees' Cyclop.*

Hedychium heteromallum. *Bot. Register*, No. 767.

DESCRIPTION.

Roots tuberous, fleshy, with long, cord-like fibres; stem herbaceous, simple, erect, from 4 to 6 feet high; leaves alternate, elliptical, undulated, with a filiform point, strongly nerved, of a shining green colour on the upper surface, paler and downy below; the sheathing of the leaves purpurescent and villous, terminating in a ligulated obtuse *ocrea;* spike a compact, partially imbricated thyrsus; bractes numerous, convolute, reflexed, 2–3 florous; outer bracte broad-lanceolate, green; inner bracte shorter and membranaceous; calyx superior, three-toothed, sheathing the tube of the corolla three-fourths its length; outer limb of corolla in three equal, long, narrow, linear-reflexed segments; inner lip of three segments, the two lateral ones equal, long, linear, revolute; the central one or lip deeply divided into two long lanceolate, pointed lobes, of a white colour, except a tinge of yellow at the base; filament twice the length of the lip, recurved, white; anther broad-ovate, large, reflected; style filiform, supported at the base by two slender, white, germinal processes; stigma a ciliated cup.

OBSERVATIONS.

"Gathered by Dr. Buchanan in 1802, at Narainhetty, in Upper Nepal, with the *H. spicatum,* from which the natives do not by name distinguish it. It differs, however, in its much shorter and very dense spike, and long stamen and style; the calyx moreover has three teeth, and the lip of the flower is finely toothed."—*Sir J. E. Smith, in Rees' New Cyclop.*

Specimens of this rare species were received by the author from Dr. Wallich, at Calcutta, in 1819. By its compact spike, convoluted and reflexed bractes and elliptic leaves, it is sufficiently distinguished from every other species.

The present drawing was made from a plant sent by Messrs. Loddiges & Sons, of Hackney, and which flowered in the Botanic Garden at Liverpool, in the year 1822.

REFERENCES.

1. Intire flower.
2. Calyx.
3. Germen, and its subulate processes, style and stigma.
4. Outer bracte.
5. Inner bracte.

Hedychium carneum.

HEDYCHIUM CARNEUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

Gen. Char.—Anther double, naked, attached at the back to the apex of the filament; filament long, grooved, embracing the style.

Spec. Char.—Spike inclined, open, regular; flowers growing by threes, and alternating into six rows; lower lip two-lobed, papilonaceous; lateral segments broad-elliptic; leaves lanceolate; rachis hirsute.

Syn.—Hedychium carneum. *Loddiges, Bot. Cab.* 7. 693.

Hedychium carneum, spica ovato-oblonga, aperta, bracteis patentibus, ovatis, subconvolutis, 2–3 floris; limbi interioris laciniis cuneatis; labello bilobo, infundibuliformi, plicato; ungue brevi; filamento longissimo; foliis subtus vaginisque villosis, sub-bifariis. *Wallich, in MS.*

DESCRIPTION.

Roots thick, fleshy; tubers running near the surface, with long fibres; stem erect, 5–6 feet high, smooth, pale green; leaves bifarious, alternate, lanceolate, sessile, dark green above, paler and scattered with fine hairs on the margin and mid-rib below, terminating at the base on the stem with a closely adhering pallid or slightly coloured villous stipule or *ocrea*, about an inch in length; spike terminal, somewhat inclined; rachis triangular, villous; fascicles of flowers growing by threes, and alternating so as to form six upright rows or lines; outer bractes inferior, lanceolate, villous, involute in a tubular form, as long as the tube of the corolla, each containing two flowers; inner bracte smaller and membranaceous; calyx superior, sheathing the tube of the corolla; apex obliquely bifid, villous; outer limb of corolla in three equal segments, narrow, linear, irregularly diverging, tortuose; inner limb in three segments, the two lateral segments equal, expanding, of an elliptic shape; the lower segment or lip on a channelled claw, expanding into two distinct irregularly sub-ovate, papilonaceous lobes; flowers flesh colour; filament twice the length of the lip, slender, grooved, scarlet; anther double, attached by the back to the apex of the filament, embracing the style; style very slender, supported at the base by two blunt yellow germinal processes; stigma concave, ciliated at the margin; germen villous; capsule ovate, three-celled, many-seeded; seeds globular, scarlet, arilled.

OBSERVATIONS.

Although we cannot intirely agree with Dr. Wallich, that "the present plant is not to be specifically distinguished from *H. elatum*," yet we have no doubt of his accuracy when he informs us, that "it varies exceedingly, according to elevation, soil and culture," having ourselves observed a plant which flowered in the Botanic Garden at Liverpool, in the summer of 1826, and which varied from the present with flowers of a chalky white, and a crimson spot in the centre, as well as in some other particulars; but which we did not think sufficiently distinct to add to the numerous specimens already given. The present plant is more nearly related to *angustifolium* and *longifolium* than to *elatum*, from both of which it differs in the peculiar appearance of its more scanty spike of flowers, and in its somewhat broader lanceolate leaf.

The present drawing was made from a plant received in 1822 at the Botanic Garden in Liverpool, from Mr. Joseph Cooper, Lord Milton's Botanic Gardener at Wentworth House, which flowered in September 1823, and perfected its seed.

REFERENCES.

1. Germen and calyx.
2. Intire flower.
3. Outer bracte.
4. Inner bracte.
5. Germen, style with its processes and stigma.
6. Seed, with its aril.
7. Capsule.
8. Ditto, opened.

2 Hedychium

HEDYCHIUM COCCINEUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back to the apex of the filament; filament grooved, embracing the style.

SPEC. CHAR.—Spike open, regular, flowers alternating in six rows; bractes cylindrical, biflorous; lip bilobate; filament twice the length of the lip; leaves short, lanceolate-acute, mid-rib hairy below.

SYN.—H. Coccineum, Smith in Rees' New Cyclop. Sp. 5.

H. Angustifolium, Pl. Corom. No. 251.

H. Angustifolium, Bot. Reg. No. 157.

DESCRIPTION.

Root perennial, tuberous; stem simple, herbaceous, 5–6 feet high; leaves bifarious, sessile, lanceolate-acute, from six to eight inches long, glaucous, with an ovate, smooth, pale rose-coloured stipule sheathing the stem, and a few scattered hairs all the length of the mid-rib, on the under side the leaves; spike 6–8 inches long; rachis sub-hexagonal, slightly hairy; flowers alternating in six rows; bractes cylindrical, green, biflorous, smooth, with a slight tuft of white hairs at the apex; inner bracte to each flower cuneate, membranous; calyx cylindrical, three-toothed, sheathing the tube of the corolla half its length, and scattered with white hairs; outer limb of the corolla of three long, linear, reflexed, tortuose segments; inner limb in three segments, two of them equal, linear, sub-elliptic and undulated; the third, or lip, standing on a long contracted claw, and expanding at the apex into two equal, ovate lobes; filament twice the length of the lip, grooved, embracing and concealing the style; anther double, attached on the back, at about one-third its length, to the apex of the filament; style rising between two short, blunt, germinal processes, and terminating a little beyond the anther, in a compressed, ciliated, cup-shaped stigma; germen downy, three-celled.

OBSERVATIONS.

The first notice we derive of this fine and very distinct species of *Hedychium*, is from a specimen gathered by Dr. Francis Hamilton, (late Buchanan,) at *Suembu*, in the year 1802, an account of which is given by Sir J. E. Smith, in Rees's New Cyclopædia, from which it appears, that it is a native of the woods of Upper Napal, where it is known by the name of *Gunculo-Swa*. This is also the plant figured in the Coromandel Plants, No. 251, under the name of *H. angustifolium*, although the description there given does not apply to the plant there figured, being the description of the *real H. angustifolium*, a very different species. The true *Coccineum* is also figured in the *Bot. Reg.* No. 157; and although the Editor justly observes, that he can scarcely doubt it is the *Coccineum* of Sir J. E. Smith, as described in the Cyclopædia, yet he has been led, on the authority of the Coromandel Plants, to retain the specific name of *Angustifolium*. From him we learn, that this species was first introduced into this country by Sir Abraham Hume, and that the plant from which the drawing there given was taken, and the accurate description was made, flowered in the hot-house at Wormleybury.

The *H. Coccineum* may be readily known from all the regularly-spiked plants of the same genus with red flowers, by its shorter leaf, tapering directly from nearly its base to a sharp dagger-like point, and the mid-rib hairy below. The leaves of all the other species are much longer, and more or less inclined to a linear form.

In Curtis's Bot. Mag. No. 2078, a figure is given of an Hedychium under the name of *Angustifolium*, which the Editor suspects to be the variety of Coccineum mentioned by Dr. Buchanan, which Sir J. E. Smith is inclined to think may be a distinct species. It is highly satisfactory to find, that both these opinions are well founded. The species thus referred to has flowered, for several successive years, in the Botanic Garden at Liverpool; and being *specifically* distinct from both *Coccineum* and *Angustifolium*, will be found figured in the present work under the name of *H. aurantiacum*.

N.B. In our *Observations* on *H. longifolium* in the present work, (lines 9 and 10,) the references to *Bot. Mag.* 2078, and *Bot. Reg.* fig. 157, should be transposed, our *H. aurantiacum* having been published under the name of *angustifolium* in the former, and not in the latter of those works.

Hedychium longifolium

HEDYCHIUM LONGIFOLIUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back by a flexible ligament to the apex of the filament; filament long, flexible, grooved, embracing the style.

SPEC. CHAR.—Spike open, regular, flowers in whorls of threes, alternating on the spike into six rows; bractes biflorous; lip bilobate, papilionaceous; filament twice the length of the lip; leaves long, linear, æquilateral, glaucous; midrib hairy below.

SYN.—Long-leaved, red garland-flower.

DESCRIPTION.

Roots perennial, tuberous; *stem* 6–8 feet high, glaucous, smooth, erect; *leaves* opposite, alternate, linear-lanceolate, two feet long, terminating in a filiform point, smooth on both sides, except the midrib on the under side, which is hairy, and striated with pellucid spots; *sheathing* of the leaves terminating in an *ocrea*, or ligulated stipule embracing the stem, about an inch in length, white; *spike* slightly declined, 12 inches or upwards in length; *rachis* obtusely triangular, with fine pellucid spots; *flowers* surrounding the spike in threes, alternating and forming six rows; *bractes* biflorous; *outer bracte* green, smooth, slightly hairy at the point; *inner bracte* cuneate, slightly ciliated; *calyx* tubular, half the length of corolla, trifid, hairy; *corolla* with a double border; *exterior limb* in three equal segments, long, linear, narrow, reflexed; *interior limb* in three segments, the two lateral ones broad, elliptic-ovate, the third or lip on a contracted channelled claw, expanding into two broad, ovate, folding lobes; *filament* erect, tapering, twice the length of the lip, grooved, embracing the style; *anther* double, terminal, attached at about one-third on the back, by a flexible ligament to the point of the filament; *style* very slender, embraced by the filament, and extending a little beyond the anther; *stigma* a compressed cup, finely ciliated; *germen* hairy; *capsule* three-celled; *seeds* arilled.

OBSERVATIONS.

This is one of the fine species of Hedychium flowering in a regular open spike, with red, or orange-coloured flowers; of which several others are known, from all of which the present species is distinguished by its long, linear-lanceolate leaves, and the broad, elliptic, lateral segments of the inner limb of the corolla.

In other respects H. *longifolium* approaches nearest to H. *carneum*, of which an elegant figure is given in Loddiges' *Bot. Cab. fig.* 693; but is distinguished, not only by its leaves, but by the stipule or ocrea at the base of the leaf, which in *longifolium* is long and white, in *carneum* shorter and red; by the colour of the flower, which in *carneum* is a pale flesh colour; and by the scent, which in *carneum* is very fragrant, but in *longifolium* is scarcely perceptible.

From H. *coccineum*, figured under the name of H. *angustifolium*, in *Coromandel Pl. fig.* 254. *Bot. Mag.* 2078; from H. *aurantiacum*, figured as *angustifolium*, *Bot. Reg. fig.* 157; as well as from the true *Hedychium angustifolium*, this species may be known, as well by the form, as by the greater length of the leaves, which in all those species are lanceolate-acute; by its glaucous colour, and hairy midrib below; by the broad lateral segments of the interior limb of the corolla; and by its being nearly without scent.

This species was sent to the Botanic Garden in Liverpool, by Dr. Wallich, in 1819, by the name under which it was then known in India, of *Hedychium coccineum;* but the true *coccineum* having already been described by Sir J. E. Smith, in Rees's *New Encyclop.* another specific name became necessary. In a fine native specimen sent me by Dr. Wallich, from Calcutta, the spike of the flower is one foot, and the leaf two feet in length.

REFERENCES.

1. Corolla.
2. Germen, style, and stigma.
3. Calyx.
4. Outer bracte.
5. Inner bracte.

Hedychium angustifolium

HEDYCHIUM ANGUSTIFOLIUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

Gen. Char.—Anther double, naked, attached at the back to the apex of the filament; filament grooved, embracing the style; stigma a ciliated cup; capsule three-celled.

Spec. Char.—Spike open, regular, flowers in threes, alternating into six rows; bractes biflorous; lip deeply divided into two equal, obtuse segments; leaves sessile, alternate, distich, linear-lanceolate, ending in a filiform point, smooth on both sides.

Syn.—Hedychium angustifolium, *Roxb. Flor. Ind.* v. i. p. 11. *Corom. Pl. No.* 254, (exclusâ figurâ.)

DESCRIPTION.

Root tuberous, running horizontally, perennial; stem herbaceous, erect, 5–6 feet high; leaves bifarious, sessile, alternate, linear-lanceolate-acute, 15–18 inches long, 1¼ broad, with a filiform, twisted, slightly hairy point, dark green above, glaucous beneath, smooth on both sides, terminating in a short, ligulated, obtuse, rose-coloured stipule, or *ocrea;* spike terminal, declined, hairy, 6–12 inches long; flowers in whorls of threes, alternating on the rachis, and forming six distinct upright rows; outer bractes cylindrical, sea-green, smooth, with a few scattered hairs at the point; inner bractes membranous, bifid, with a tuft of hair at the points; calyx superior, sheathing the tube of the corolla its whole length, three-toothed; outer limb of corolla three linear, equal, reflexed, tortuose segments; inner limb of three segments, the two lateral ones equal, ovate, elliptic, the lower one or lip expanding into two deeply-divided ovate lobes; filament twice the length of the lip, grooved, flesh-colour; anther long, naked, bilobate, dark orange; style long, slender, supported by two blunt germinal processes, about a quarter of an inch in length; stigma concave, ciliated; germen ovate, hairy.

OBSERVATIONS.

Although figures of Hedychium angustifolium are professedly given in the *Coromandel Plants*, No. 254, *Bot. Mag.* 2078, and *Bot. Reg.* 157; none of these appear to us to exhibit the true plant, the figure of which is now, we believe, for the first time published. It must further be remarked, that in the first of the above-mentioned works, the figure does not agree with the description, but is the *H. coccineum* accurately described by Sir J. E. Smith, in Rees's New Cyclop. sp. 5, and figured also in *Bot. Reg.* No. 157, as *H. angustifolium.* That the Editors of the last-mentioned work were, however, in some degree aware of the error, is apparent from the following passage in *Bot Reg.* v. ii. p. 157. After adverting to the four new species added to this genus, by Sir J. E. Smith, in Rees's Cyclopædia, from specimens collected in India by Dr. Buchanan (now Hamilton,) they observe, "We *can scarcely doubt* that our plant is the *coccineum* of these, notwithstanding some slight differences in the detail, scarcely indeed exceeding such as might be expected in a description from the dried specimen, when referred to the living; but the identity of our plant with the *angustifolium* of the late Dr. Roxburgh, being beyond a cavil, and the account of it having long been written under that title, and now actually printed in the forthcoming fasciculus of the work on the *Plants of the Coast of Coromandel,* we feel ourselves warranted in adopting it, although not the one first published." To this passage Dr. Wallich has referred in a note in *Flor. Ind.* vol. i. p. 82, where he says, "Notwithstanding the opinion which this distinguished Botanist (the Editor of the Bot. Reg.) has expressed, I am led to suspect that *H. coccineum* of Sir J. E. Smith *(Rees's New Cyclopædia, in loco)* is a distinct species, of which I have examined the original

drawing, left by my inestimable friend and predecessor, Dr. F. Buchanan, at the Botanic Garden at Calcutta." And in a letter from Dr. Wallich to myself, dated Calcutta, 4th Dec. 1824, he observes, that " The *H. coccineum* is undoubtedly Hamilton's (Buchanan's) plant, distinguished by its ensiform leaves and red colour from the nearest species." The validity of the distinction between *coccineum* and *angustifolium* being thus established, it only remains to show in what particulars that distinction consists, which, it is hoped, will be sufficiently seen by the figures and descriptions given in the present work.

Our first acquaintance with the true angustifolium was derived from a specimen found by the late lamented Dr. Smith, in Sylhet, and sent me by Dr. Wallich in 1819, which perfectly agrees with the *description* in Flor. Ind. and with the *figure* now published, the plant of which was also sent to the Liverpool Botanic Garden by Dr. Wallich. The flower is sweet, but not so fragrant as the *coccineum.*

The *Hedychium angustifolium* of *Bot. Mag.* No. 2078, is the orange-coloured variety of Sir J. E. Smith's *coccineum*, and is given in this work as a distinct species, by the name of *H. aurantiacum.*

REFERENCES.

1. Intire flower.
2. Inner bracte.
3. Outer bracte.
4. Germen and calyx.
5. Lip.
6. Germen, with its processes, style and stigma.

Hedychium aurantiacum

HEDYCHIUM AURANTIACUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

Gen. Char.—Anther double, naked, attached at the back by a flexible ligament to the apex of the filament; filament grooved, embracing the style.

Spec. Char.—Spike open, regular, flowers alternating in six rows; bractes cylindrical, acute, villous at the apex, 2–3-florous; filament twice the length of the lip; lip deeply separated into two lobes; leaves alternate, bifarious, sessile, narrow-lanceolate, mid-rib hairy.

Syn.—*H. coccineum* (var. aurantiacum). Buchanan, ap. Sir J. E. Smith, in *Rees's New Cyclop.* Wallich, *Flor. Ind.* vol. i. p. 82, in note.

H. angustifolium. Curtis, *Bot. Mag. No.* 2078.

DESCRIPTION.

Roots tuberous, spreading horizontally; stems erect, herbaceous, of a purplish colour when young; leaves bifarious, sessile, narrow-lanceolate, the mid-rib and apex villous, purplish on the under surface when young; sheathing of the leaves terminating in a very short pallid ligula or *ocrea*, embracing the stem; spike terminal, slightly declined, dense, regular, flowers alternating in three, and forming six erect rows on the rachis, which is hairy; bractes cylindrical, 2–3-florous, formed of a broad, lanceolate, finely-pointed leaf, villous at the apex; inner bracte to each flower cuneate, membranous; calyx cylindrical, three-toothed, inflated, nearly as long as the tube of the corolla; exterior limb of the corolla in three equal, long, narrow, linear, reflected, tortuose segments; inner limb of two equal, sub-elliptic narrow segments, opposite, expanding, the third segment or lip, standing on a long linear claw, and dividing into two distinct, ovate, intire, papilonaceous lobes, the whole flower a bright orange colour; filament slender, more than twice the length of the lip; anther double, orange colour; style rising between a pair of short orange coloured germinal processes, and terminating in a cup-like ciliated stigma.

OBSERVATIONS.

The *H. aurantiacum* is the plant observed by Dr. Buchanan (now Hamilton) as a variety of *coccineum*, differing in its denser spike, and orange-coloured flowers, and conjectured by Sir J. E. Smith to be a distinct species, which has proved to be the case, it having flowered annually for several years in the Botanic Garden at Liverpool, and always maintaining its peculiar characters. Although figured in *Bot. Mag.* 2078, under the name of *H. angustifolium*, the Editor appears to have been aware that this was the unnamed variety before referred to, and which we have been induced to distinguish by the name of *aurantiacum.*

The present plant, which was sent to Liverpool by Dr. Wallich in 1819, is highly and delightfully scented, and has flowered in a much larger spike than the specimen here given, which was drawn August 11, 1822.

REFERENCES.

1. Intire flower.
2. Germen, processes, style and stigma.
3. Outer bracte.
4. Inner bracte.
5. Lip.

Hedychium Gardnerianum.

HEDYCHIUM GARDNERIANUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back by a flexible ligament, to the apex of the filament; filament long, erect, grooved, embracing the style.

SPEC. CHAR.—Spike open, regular; flowers alternating in six rows; bractes biflorous; lip broad-ovate, bifid; filament twice the length of the lip; capsule three-celled; seeds numerous, arilled.

SYN.—Hedychium Gardnerianum, Mr. GARDNER's Garland-flower. Bot. Register, No. 774.

DESCRIPTION.

Roots tuberous, perennial, running near the surface of the earth, and throwing out numerous long fibres; stem simple, herbaceous, smooth, from six to eight feet high; leaves alternate, bifarious, broad-lanceolate-acute, from eight to twelve inches long, smooth on both sides; sheathing ending in an obtuse smooth stipule, or *ocrea;* spike terminal, smooth, slightly declined at the base; flowers alternating on the spike in six rows; common bractes ovate, smooth, biflorous; inner bracte one to each flower, ovate, smooth, except a small tuft of hairs at the apex; calyx tubular, tribolate, slightly ciliated at the apex, sheathing the tube of the corolla nearly half its length; outer limb of the corolla in three segments, narrow, equal, linear, reflexed; inner limb in three segments, two of them equal, lanceolate; the third or lip broad-ovate, bifid at the apex; filament erect, twice the length of the lip, grooved, embracing the style, and supporting the anther by a flexible ligula inserted at the back, at about a third of the distance from its base; anther oblong, ovate, double, naked; style long, linear, supported at the base by the germinal processes, and terminated with the concave stigma projecting beyond the anther, and beautifully ciliated; capsule three-celled, seeds numerous, arilled, dark red, aril scarlet. The flowers are of a pale yellow, or lemon-colour, strikingly contrasted with the scarlet filament, and have a powerful fragrance, resembling that of the jonquil.

OBSERVATIONS.

Our first knowledge of this superb Plant, was derived from a fine dried specimen, the spike of which was eighteen inches long, sent by Dr. WALLICH, from Calcutta, to which we had given the name of *H. excelsum;* but having afterwards, (in September 1819,) received from the same liberal quarter, the living Plant, under the name of *H. Gardnerianum*, a name adopted by Dr. WALLICH, in honour of EDWARD GARDNER, Esq. British Resident at the Court of Napal, and having since communicated it to other collections under that name, we now wish it to be confirmed. This plant, which Dr. WALLICH justly denominates *species omnium pulcherrima*, flowered in the Botanic Garden at Liverpool, on the 4th October, 1820, and produced seeds, which have vegetated.

REFERENCES.

1. Calyx.
2. The corolla intire.
3. Style and stigma.
4. Common bracte.
5. Proper bracte.
6. Seed vessel.
7. Capsule opened.
8. Seed arilled.
9. Seed naked.

Hedychium elatum

HEDYCHIUM ELATUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, naked, attached at the back to the apex of the filament; filament long, flexible, grooved, embracing the style; capsule three-celled; seeds numerous, arilled.

SPEC. CHAR.—Spike open, regular, flowers in whorls of three, alternating on the spike into six rows; bractes tubular, 3–4-florous; filament twice the length of the lip; lip bilobate, lobes elliptic-ovate, flesh-colour in the centre, the rest a dull milky white; leaves smooth and dark green above, glaucous and villous below, mid-rib below red or purple.

SYN.—Hedychium elatum. *Bot. Reg. No.* 526.

Hedychium elatum. *Loddiges' Bot. Cabinet. No.* 856.

DESCRIPTION.

Root tuberous, very large, running horizontally near the surface of the earth, perennial; stem erect, from 12 to 14 feet high, herbaceous; leaves alternate, sessile, broad-lanceolate, from 18 to 24 inches in length, smooth on the upper surface, villous and glaucous below, mid-rib below red, the young leaves are a faint purple below, but lose it with age. Stipule or *ocrea* embracing the stem, obtuse, purple, very villous; spike terminal, nearly erect, from 18 to 20 inches in length, very strong, hirsute; outer bractes inferior, cylindrical, ovate, ciliate; inner bractes pellucid, downy; flowers growing in whorls of three, alternating on the spike, so as to appear in six rows when viewed from the apex downwards; calyx superior, sheathing the tube of the corolla nearly its whole length, greenish yellow, villous; corolla with a double limb; outer limb in three long linear, slender, reflected, tortuose segments, yellow; inner limb in three segments, two lateral segments equal, elliptic-ovate, slightly crenate, flesh-coloured towards the base, a pale milky white above; lip deeply divided into two lobes, lobes trapeziform, margins slightly ciliated, rufescent towards the base, the rest a dull greyish white; filament twice the length of the lip, flexile, flesh-coloured, grooved, and receiving the style, attached at the apex by a flexible ligament to the back of the anther, which is bilobate, grooved, and receives the style, which extends a little beyond it, and terminates in a concave ciliated stigma; germen three-celled, with two short blunt processes supporting the style at the base.

OBSERVATIONS.

The figures above referred to, in *Bot. Cab. No.* 856, and *Bot. Reg. No.* 526, having been drawn from smaller specimens, give a very inadequate idea of this most magnificent plant; which, as has been well observed by Mr. Brown, is perfectly distinct from the *speciosum;* although we cannot agree in the observation, (*Bot. Reg.* p. 526.) that in *speciosum* the spike is much longer; we having in our possession a native spike of *speciosum* (a plant not yet introduced into this country,) sent us some years since by Dr. Wallich, which is only twelve inches in length, and bears about a dozen flowers, whilst the spike of the *elatum,* now figured, was eighteen inches in length, and bore double the number of flowers. The plant was nearly fourteen feet high. It was sent to the Liverpool Garden by Messrs. Loddiges. Whether this may be a different species from *H. carneum,* which, according to Dr. Wallich, (*in MSS.*) varies exceedingly according to elevation, soil, and culture, and from which he professes he cannot distinguish it, we may probably, at some future opportunity, endeavour to ascertain.

REFERENCES.

1. Inner bracte.
2. Outer bracte.
3. Corolla intire.
4. Germen and calyx.
5. Stigma, style, and processes at the base.

1.
2.
3.
4.
5.
6.
7.

ROSCOEA PURPUREA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Filament short; anther bilobate, incurved, bicalcarate at the base; stigma globular, with a compressed, ciliated orifice; corolla ringent.

SPEC. CHAR.—Inflorescence spathaceous; flowers rising in succession; spatha concealed within the sheathing of the leaves; calyx tubular, intire.

SYN.—Roscoea purpurea. *Smith, Exot. Bot.* v. ii. p. 97. *tab.* 108. *Trans. Lin. Soc.* v. xiii. p. 461. *Rees' Cyclop.*

Roscoea purpurea. *Hooker, Exot. Flora. tab.* 144.

Hatucon Swa *of the Nawars. Smith.*

DESCRIPTION.

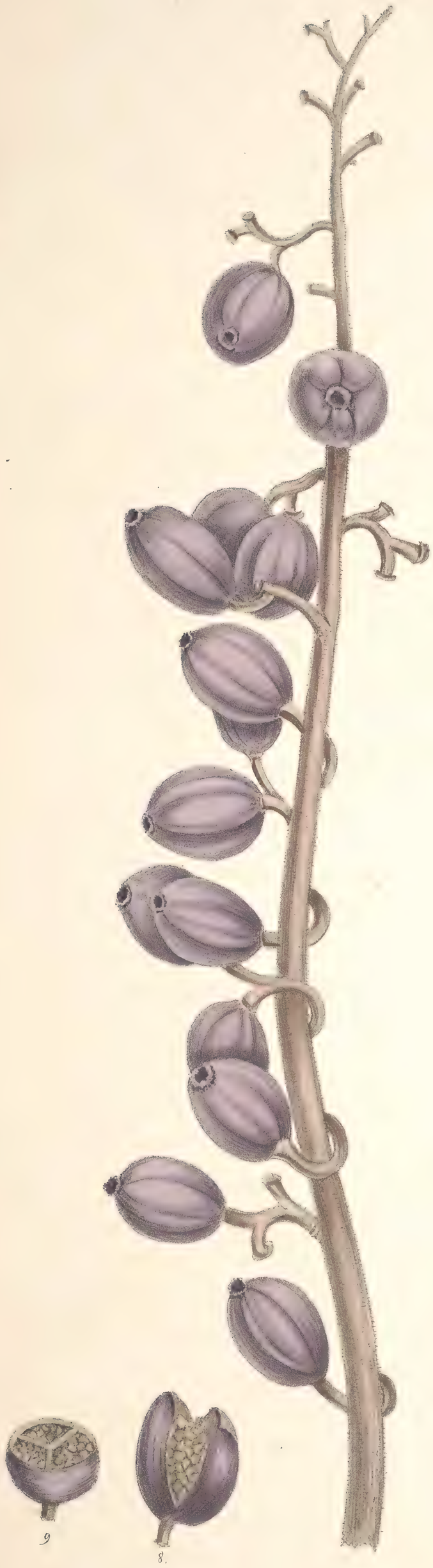
Root perennial, consisting of numerous long, fusiform, diverging tubers, terminating in branching fibres; stem herbaceous, erect, 12–15 inches high, invested in the sheaths of the leaves; leaves lanceolate-acute, alternate, intire, waved at the margins, smooth on both sides, 6–8 inches long, pale green; spike terminal, containing 4 or 5 flowers, opening in succession, of a pale purple or lilac colour; calyx tubular, membranaceous, intire, sheathing a great part of the corolla; corolla tubular, the tube five inches in length, expanding into a double limb or margin; outer limb in three sections, irregular; upper section broad-lanceolate, vaulted, erect, mucronate, protecting the interior parts; lateral sections nearly equal, linear-lanceolate, declined; inner limb bilabiate; upper lip in two converging, crescent-shaped lobes, closely enfolding the anther and stigma; lower lip very large, broad-ovate, undulate on the margin, expanding and slightly bifid at the apex; filament short, subulate, erect, attached to the faux of the corolla; anther two-lobed, attached at the back to the apex of the filament, long, incurved, extending at the base into a bifid appendage of two yellow claws or spurs; style very long, slender, tubular, supported at the base by two erect white processes, of about a fourth of an inch in length, conforming itself above to the curve of the anther, and projecting a little beyond it; stigma globular, slightly pubescent, with a compressed, ciliated orifice; germen oblong, three-celled.

OBSERVATIONS.

The first living plant of this species of *Roscoea,* which we believe was ever introduced into this country, was sent by Dr. Wallich, of Calcutta, to the Botanic Garden in Liverpool, where it flowered in 1821. Since that time, it has been received into the Botanic Gardens of Edinburgh and Glasgow, in the latter of which it flowered in August 1824, and has been well figured and published by Dr. Hooker, in his *Exotic Flora, No.* 144. The young plants of this species, on their first flowering, are of a weak and slender habit, and differ so greatly in their appearance from the long established plants, that we were inclined at first to consider them as a different species, but further experience has led us to adhere to the opinion of Dr. Hooker, that they are in fact the same, and that notwithstanding some dissimilarities, they agree also with the figure of Sir J. E. Smith, published many years before the living plant was known here, in his *Exot. Bot. tab.* 108. Dr. Hooker has remarked that " few inmates of the stove are possessed of greater recommendations either with regard to the beauty or the durability of their inflorescence, than the *Roscoea purpurea;* for its blossoms are singularly large and showy; and though they are produced singly, and each continues in perfection but for one day, yet there is a considerable number and a long succession of them."

REFERENCES.

1. Upper section of exterior limb of corolla.
2, 3. Lateral sections of ditto.
4, 5. Upper sections of interior limb of corolla.
6. Lower section or lip.
7. Intire flower.
8. Germen and calyx.
9. Tube of the corolla, filament and anther, with its bicalcarate appendage.
10. Style, with its germinal processes and stigma.



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Renealmia exaltata

RENEALMIA EXALTATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Filament none; anther double, linear, naked, attached by a short ligament to the base of the middle segment of the exterior limb of the corolla; style tubular; stigma bluntly triangular, peltate, perforate.

SPEC. CHAR.—Spike radical, lateral spikelets compound; bractes alternate, many-flowered; perianth inferior, bifid; capsules large, ovate, umbilicate, dark purple, fibrous, mucilaginous, three-celled, seeds numerous, angular, aromatic.

SYN.—Paco Seroca. *Plumier Hist.* 5. 25, 26.

Renealmia Exaltata. Ess. char. corolla three-cleft; nectary oblong; calyx of one leaf; anther sessile, and opposite to the nectary; berry fleshy. *Lin. Sup.* p. 7. *Wild.* i. 6.

Alpinia Renealmia. *Smith in Rees' Cyclop. Suppl.* No. xiv. 2. *Alpinia Exaltata,* racemo subradiate erecto; labio concavo, trilobo; foliis lanceolatis, undulatis. *Ulterius inquerenda an vere hujus generis sit. Roemer & Schultes,* i. 21.

Alpinia exaltata, racemo subradicali adscendente. *Meyer, Flora Esequibonensis,* p. 4.

Alpinia tubulata. *Bot. Reg.* fig. 777. *Bot. Mag.* 2494.

DESCRIPTION.

Root tuberous; stem erect, rising to 8 or ten feet in height; leaves distant, alternate, bifarious, sessile, linear-lanceolate, smooth; scape radical, lateral, rising from near the base of the stem, villous, with many membranous, imbricated, coloured bractes; spike long, erect, many-flowered; floral bractes about the length of the flowers, lanceolate, persistent, membranous, coloured; pedicels short, villous, compound, 2–4 flowered; perianth inferior, of one leaf, ovate, bifid and ciliate at the apex, involute, coloured, covering the germen and about two-thirds of the calyx; calyx superior, tubular, three-toothed, coloured, permanent; corolla tubular, expanding into a double limb; outer limb in three nearly equal, ovate segments, middle segment antheriferous, inner limb or lip rather larger, opposite to the anther, obscurely three-lobed, and crenate at the apex; filament none; anther double, linear, naked, attached at the back by a short ligament inserted in the faux of the corolla, at the base of the middle or upper section of the outer limb; style thread-shaped, tubular, supported at the base by two subulate processes, received between the lobes of the anther, and extending a little beyond them; stigma obtusely trigonous, peltate in front, with two concurrent orifices at the back, communicating with the tube of the style; every part of the flower downy, and covered with small glandular spots; germen ovate, villous; fruit a pulpy berry, ovate, or nearly globular, dark purple, approaching to black, fibrous, mucilaginous, three-valved, three-celled, seeds numerous, enclosed in a pulpy substance, angular, aromatic.

OBSERVATIONS.

For the complete knowledge recently obtained of this plant, we are indebted to our friend and townsman Charles S. Parker, Esq. who discovered it growing in its uncultivated state in Demerara, and obligingly furnished us with specimens both in flower and fruit; from the latter of which we obtained seeds, which were sown in the Botanic Garden at Liverpool, in the month of July, 1825, and have produced plants, some of which are now from 5 to 6 feet high; but none of them having as yet flowered, we are compelled to have recourse for our description to the specimens brought by Mr. Parker, as well dried, as preserved in spirits; from which we are enabled to give as satisfactory a description, as we apprehend could have been obtained from the inspection of the living flower.

The history of this plant, which is highly interesting and curious, was first detailed by Sir J. E. Smith, in the article *Alpinia*, in the Supplement to *Rees's Cyclop.* From this we learn, that it was described by Linnæus, from specimens of a cluster of the flowers, and a quantity of the fruit, with a leaf, sent to him in bottles of spirits. The former was taken out and dried, by Linnæus himself, for his Herbarium, where it now lies marked by him *Heliconia*, which genus it somewhat resembles in general aspect. " The spirits in the bottle of fruit being gone, the latter is also dried; but enough remains to show it has been a fleshy, very fibrous, oval, capsule, above an inch long, of three valves, strongly umbilicated, and containing numerous ob-ovate seeds, now of a shining brown; their flavour is lost." A Dutch M.S. sent from Surinam, with the collection to which the above belonged, contains the following information: " No. 64, is a sort of reed, and has upon each stalk four such leaves as are here to be seen, two uppermost next to each other, and then the other two a span under the uppermost, and a span between these two downwards to the fruit. The fruit is at first red, black when ripe. The seed in the fruit tastes exactly like cardamom. The stalk to which the fruit grows is two feet and a half long, beset with 25 to 27 fruits."

The essential, natural, and specific characters given by Linnæus, and inserted in the *Cyclop.* are in perfect accordance with our specimens, particularly as relates to the most important parts, which are thus described: " filament none; anther solitary, inserted into the mouth of the tube in the bosom of the lower, (upper) segment of the corolla, opposite to the nectary (lower lip,) unconnected, straight, linear, emarginate; stigma peltate, a little flat head, abrupt on the side towards the nectary, an orifice running into the style; pericarp a berry, oblong, round, with three furrows, smooth, fleshy, with an umbilicated termination, three cells in the centre, the cells soft and membranous; seeds numerous, oblong."

Since the above-mentioned account in the Cyclopædia, we are not aware that any authentic information has been obtained respecting this plant, until the publication of No. cviii. of the *Bot. Reg.* fig. 777, where a good figure is given under the name of *Alpinia tubulata*, from a plant raised by Mr. Lambert, at Boyton, from seed sent from Demerara, accompanied by a full description and observations, in which the editor has remarked on the suggestion of Mr. David Don, " that among the unpublished engravings in Mr. Lambert's library, there is one intended for a work of Plumier's, which clearly represents either one of the same species, or else one of the same genus." After a close inspection and examination of copies of Plumier's two drawings, with the very perfect specimens of the plant and fruit brought by Mr. Parker, and now in our possession, we have no hesitation in stating it as our decided opinion, that the figures of Plumier, and that in the Botanic Register, represent not only the same genus, but the same species of plant, to which we have now restored its proper and original name of *Renealmia exaltata.* Another figure of the same plant, on rather a reduced scale, has been given in *Bot. Mag.* No. 2494, where the learned editor expresses his doubts " whether it can belong to the same genus as *Alpinia nutans*, and the other species with which we are acquainted;" but relinquishes his own opinion to that of Mr. Don, who has placed it, not however without hesitation, under that genus. He has also referred to the Alpinias enumerated in the second section of the *Flora Indica*, with a radical inflorescence, a distinction which he does not however consider sufficient to constitute a genus. In the latter opinion I am induced, from the experience I have had of this tribe, fully to concur, (though formerly of a different opinion) having seen species of both Zingiber and Costus, some with a radical, and others with a terminal inflorescence; and in one instance both radical and terminal flowers on the same plant. In detaching the genus *Renealmia* from that of *Alpinia*, I wish it therefore to be understood, that I have not been in any degree influenced by the radical inflorescence of the former, but have relied for its generic character on the particulars before stated in that respect. The pulpy capsule of *Renealmia exaltata* contains an acid, which induces the West Indians to make use of it as a preserve, in which state we have seen specimens of it brought to England, and found it, on tasting, very agreeable. By the kindness of Mr. Parker we are also possessed of specimens of another plant of the same genus, nearly allied to the *Exaltata*, but differing in having a more flexuose spike, with simple one-flowered pedicels, and floral bractes twice the length of the flower. The seeds of this were also sown, in the Botanic Garden at Liverpool, at the same time with those of *Renealmia exaltata*, and have produced plants, which are now in a growing state, but have not yet flowered.

REFERENCES. —— 1. Entire flower. 2. Outer and inner section of corolla. 3. Germen, corolla, anther, style and stigma. 4, 5, & 6. Germen, style and stigma magnified. 7. Anther, natural size. 8. Capsule or berry. 9. Same opened. 10. Seeds.

Renealmia fasciculata

RENEALMIA FASCICULATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Filament none; anther attached by a short ligament to the base of the upper segment of the exterior limb of the corolla; style tubular; stigma bluntly triangular, peltate, perforate.

SPEC. CHAR.—Spike radical, lateral; bractes sessile, fasciculate; stems erect; leaves broad-lanceolate, alternate; lip large, broad, white, with a yellow cloud down the middle.

DESCRIPTION.

Roots composed of large ovate tubers, with numerous annular divisions; stems erect, three feet in height, leaves broad-lanceolate, æquilateral, sessile, finely nerved, rising from between two smaller leaves; spike radical, lateral, bractes sessile, many-flowered; flowers in fascicles; corolla tubular, expanding into a double limb; outer limb in three sections, lanceolate, acute, the upper or middle section antheriferous at the base; inner limb or lip broad ovate, crenate at the margin, striate, white, with a yellow tinge down the middle; filament none, anther double, linear, naked, inserted by a slender ligament into the faux of the corolla, and attached to the base of the middle section of the outer limb; germen and fruit unknown.

OBSERVATIONS.

This very curious Scitaminean Plant is known to us only by a drawing made at Lucknow, by a native artist, from the living plant, for the Right Hon. the Earl of Mountnorris, by whose obliging permission we are enabled to give a figure of it. Although from the want of the necessary details, we are not enabled to decide on this plant with the same confidence as on others of the same group, yet we have little doubt it will be found to belong to this genus, the plant in its general habit not according with that of Alpinia, and the anther appearing to be attached by a slender ligament to the faux of the corolla, at the base of one of the segments of the exterior limb. We are not however, without hopes, from the investigations which are now making in India, and particularly from the journey of our liberal and highly respected friend, Dr. Wallich, into the Burmese territory, on which he departed from Calcutta in the month of July 1826, that both this and many other plants yet but imperfectly known, will be discovered, and finally transmitted to Europe; and it is with a view of promoting these and similar inquiries, that we have been induced to give figures of several plants which we have not yet seen in their living state, in the course of the present work.

Cypripedium Calceolus

ALPINIA ALLUGHAS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, attached to the front of the filament; filament simple, erect, not extending beyond the anther; inner border of the corolla unilabiate; capsule three-celled.

SPEC. CHAR.—Stem erect; panicle terminal; inner border of corolla deeply divided into two sections, each section bifid, with a fleshy protuberance at the base; leaves lanceolate, smooth, finely nerved.

SYN.—Mala-inschi-Kua. *Rheede, Mal.* xi. p. 29. t. 4.

Hellenia Allughas. *Linn. Willd.* i. 4.

Heritiera Allughas. *Konig. in Retz. Obs.* 6. 1.

Taraca. *Sir Wm. Jones, in Asiat. Res.* iv. 240.

Tara, or Tarac of the Bengalese. *Roxb. in Asiat. Res.* xi. 353.

Alpinia Allughas. *Roxb. in Flor. Ind.* i. 60.

Hellenia Allughas. *Andrews, Bot. Rep.* t. 501.

Hellenia Allughas. *Roem. & Schultes,* i. 22.

Alpinia Allughas, foliis lanceolatis nitidis, utrinque attenuatis, panicula terminali, labello bifido, lobis retusis, capsulis sphæricis nitidis polyspermis. *Spreng.* i. 14.

DESCRIPTION.

Root tuberous, with many thick fibres, perennial, aromatic; stem erect, slightly compressed, 2–3 feet high; leaves alternate, bifarious, lanceolate, smooth, equilateral, finely nerved, short petioled, petioles sheathing the stem, with a stipulary process above the insertion of the leaf; panicle terminal, slightly inclined to one side; flowers in succession, from a foliaceous sheath, on a slender flexile rachis; calyx superior, tubular, fleshy, obscurely three-toothed; corolla with a short tube, expanding into a double border; exterior border in three sections, the middle one concave, projecting over the anther; the lateral ones equal, ovate, retuse, pure white; interior border or lip two-cleft, with two fleshy protuberances near the base, in the place of the hornlets and auriculæ in other species; the sections of the lip each divided again into two ovate lobes, a streak of bright rose colour proceeding from the base, extends into each lobe of the lip, tinging the rest of the petal with a lighter tint; filament erect, simple, nearly the length of the lip, supporting in front a broad two-lobed white anther, and terminating with its apex; style the length of the filament, supported at the base by two subulate germinal processes, and terminated in a compressed, ciliated, concave stigma; germen globular, hairy; capsule three-celled; seeds numerous.

OBSERVATIONS.

This beautiful and delicate plant, although long known, is not of frequent occurrence in this country, with the climate of which it does not appear to agree. The present figure was taken from a specimen which flowered in the Botanic Garden in Liverpool, in August 1826.

It will be seen from our synonyms, that several authors have assigned this plant to the genus *Hellenia*, but a very slight observation will shew, that it differs essentially in those particulars on which the character of the *genera* of Scitaminean Plants is now found to depend, and that the extension of the filament

beyond the anther in an ovate process in the *Hellenia cerulea*, designates a variation in other respects which renders that plant the type of a new genus, of which other species may hereafter be discovered, but of which no others are as yet known.

The *Alpinia Allughas* is said to have been sent by Mr. Peter Good, to Kew, in 1796. It has since been raised from seeds by A. B. Lambert, Esq. and flowered at Boyton.

REFERENCES.

1. Entire flower.
2. Germen and calyx.
3. Exterior limb of corolla.
4. Interior limb of corolla, or lip.
5. Filament and anther.
6. Germen, with its processes, style and stigma.
7. Stigma magnified.

Alpinia calcarata

ALPINIA CALCARATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament simple, erect, not extended beyond the anther; inner border of the corolla unilabiate; capsule three-celled; seeds arilled.

SPEC. CHAR.—Flowers terminal, spike slightly declined, downy; lip large, ovate, crenate, slightly bifid; spurred at the base; leaves narrow-lanceolate, inæquilateral.

SYN.—Alpinia calcarata. *Roxb. Flor. Ind.* 1. 67.

Globba erecta. Redouté. *Pl. lil. tab.* 174.

Alpinia calcarata. *Edwards, Bot. Reg. fig.* 141.

Spurred narrow-leaved Alpinia. *Smith in Encycl.*

DESCRIPTION.

Root perennial, horizontal, somewhat woolly, crooked, stoloniferous, with many fleshy fibres, fragrant; *stems* numerous, erect, smooth, from three to five feet high; *leaves* bifarious, alternate, short-petioled, intire, linear-lanceolate-acute, inæquilateral, marcescent at the apex, about a foot long, and from one to two inches broad; *sheaths* clasping the stem, smooth, with an acute stipulary process above the insertion of the leaf; *spike* terminal, slightly declined at the base, from four to five inches long, downy; *flowers* numerous, in pairs, expanding successively; *bractes* elliptical, white, one-flowered; *calyx* superior, three-toothed, white, smooth; *corolla* tubular, with double border; *exterior limb* in three deep, equal, linear, obtuse segments, pure white; *interior*, or *lip*, large, expanding, ovate, obtusely crenate, bifid at the apex, deep yellow, with red spots, and richly streaked with dark purple veins; *lateral lobes* wanting, but the lip is furnished with two awl-shaped, incurved appendages, or *spurs*, embracing the base of the filament; *filament* simple, club-shaped, covering the back of the anther, but not extending beyond it; *anther* double, attached to the filament its whole length, opposite to the lip; *style* tubular, filiform, embraced by the anther, and extending a little beyond it, supported at the base by the glandular processes, supposed by some to be imperfect stamina, and by Kœnig, nectaries; *stigma* funnel-shaped, ciliate, compressed; *germen* globose, downy, three-celled, many-seeded; *seeds* arilled.

OBSERVATIONS.

The present species has been rendered doubtful by the publication of other species under the same specific name; (Andrews, *Bot. Reg. fig.* 412. Renealmia calcarata,) but the accurate descriptions of Sir J. E. Smith and Dr. Roxburgh, perfectly corresponding with the plant, as it has flowered for several years in the Botanic Garden at Liverpool, enable us to ascertain it without difficulty. Its flowers, although not so large, approach in beauty and habit those of *Alpinia nutans*, and, like those, are extremely fragrant.

On a spike of flowers at the Botanic Garden at Liverpool, (August 1820,) was found a *diandrous* flower of this species, with two filaments, each bearing a *double anther*, and only *one style* rising equally between them.

Alpinia mutica.

ALPINIA MUTICA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament simple, erect, not extending beyond the anther; inner border of the corolla unilabiate; capsule three-celled; seeds arilled

SPEC. CHAR.—Spike terminal, compound, slightly declined; lip obscurely three-lobed, bifid, spurless, with two hairy glands at the base; leaves short-petioled, narrow, linear; seeds numerous.

SYN.—Alpinia mutica. Roxb. Fl. Ind. vol. I. p. 65.

Pointley's narrow-leaved Alpinia. Smith, in Rees's Encycl.

DESCRIPTION.

Root perennial, tuberous; *stems* erect, 5–6 feet high; *petioles* short; *leaves* alternate, bifarious, narrow, subsessile, linear-lanceolate, polished and entire, 1–2 feet long, 1 inch broad; *sheaths* smooth, terminating in an ovate ligula or ocrea; *racemes* terminal, slightly declined, many-flowered; *pedicels* alternate, villous, two to four flowered; *bractes* oblong, caducous; *flowers* large, nodding; *calyx* irregularly three-toothed, white, margins coloured; *corolla, tube* short, recurved, border double; *exterior lip* in three sections; *superior section* broad, ovate, concave, hooded; *two inferior sections* narrow, linear, oblong, ovate, all the sections white; *interior limb* or lip expanding, waved, or curled, and bifid at the apex; *two hairy glands* supply the place of the spurs at the base of the lip in other species; *filament* short, erect, covering the back of the anther, but not extending beyond it; *anther* large, double, attached by its back to the filament through its whole extent, opposite to the lip; *style* filiform, embraced at the base by the two small glandular processes; *stigma* funnel-shaped, ciliate, compressed, extending a little beyond the anther; *capsule* size of a gooseberry, yellow, or deep orange, three-celled; *seeds* numerous, angular, arilled.

OBSERVATIONS.

This fine plant was first discovered in the forests of *Prince of Wales's Island*, and introduced into the Botanic Garden at Calcutta, by Mr. W. ROXBURGH; whence it was sent, some years since, to the Botanic Garden at Liverpool, where it has regularly flowered about August.

The glands at the base of the lip tend to throw some light on the economy of these plants, as they carry on the functions of secretion; and lead us to suppose, that the spurs or hornlets, by which almost all the other species of Alpinia are distinguished, perform a similar office.

Dr. Roxburgh informs us, that the style in this species is embraced at the base by a *single*, truncate, dentate, glandular body, (Nectary of König, Retzius, and Willdenow;) but in this instance he is mistaken, it being furnished with the two processes, as in other Scitaminean plants.

REFERENCES.

1. Calyx.
2. Upper lip of the exterior limb of the corolla, filament, anther, and style.
3. The two lower lips of the exterior limb of corolla.
4. The interior limb or lip of the corolla, with the glands at the base.

Alpinia bracteata.

ALPINIA BRACTEATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament erect, simple, not extending beyond the anther; inner limb of corolla unilabiate.

SPEC. CHAR.—Filament long, subulate; anther ovate; stem jointed, inclined to spiral; leaves lanceolate-acute, on bracteated petioles; lip panduriform, tripartite, crenate.

SYN.—Alpinia bracteata. *Roscoe, in Trans. Lin. Soc.* v. xi. p. 281.

Alpinia bracteata. *Smith, in Rees' Cyclop.*

DESCRIPTION.

Stem cylindrical, somewhat spiral; leaves lanceolate-acute; bractes foliaceous, rising from the joints of the stem, and inclosing the petioles until their union with the leaf; spike terminal, in a loose panicle, many-flowered, erect; calyx superior, in three leaves; corolla with a double limb; outer limb in three ovate sections, the middle one rather larger, and hooded over the filament and anther, of a pure transparent white; inner limb, or lip, of one petal, deeply indented at the sides, so as to form three nearly equal, obtuse lobes, which are undulate or crenate at the margin; colour bright yellow, with purple rays diverging from the base, where it is furnished with hornlets or spurs, as usual in most other species of this genus; filament about the length of the middle section of the outer limb of the corolla, subulate, grooved, of a crimson colour, supporting a large, ovate, two-lobed anther; style filiform, inclosed in the groove of the filament, and projecting a little beyond the anther; stigma a ciliated cup.

OBSERVATIONS.

Another singular species of Alpinia, from a drawing in the collection of the Right Hon. Lord Stanley, at Knowsley, to whom we are indebted for permission to publish it. Although extremely unlike any other known species of this genus, it presents at the first view such a decided character, as to leave not the slightest doubt that such a plant exists, although it has not been introduced into this country, nor mentioned, as we believe, by any traveller. Some account of it has already been given by the author of the present work, in *Lin. Trans.* vol. xi. p. 281, (not in vol. ix, as erroneously referred to, in the description of *Alpinia diffissa,)* and both this and the *diffissa* are also noticed by Sir J. E. Smith, in *Rees' Cyclop.* a circumstance omitted in the description of that plant. The habit of the *bracteata* is that of a *Costus,* rather than of an *Alpinia;* but an inspection of the parts of fructification, immediately removes all doubt as to its *genus.*

Alpinia diffusa

ALPINIA DIFFISSA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

Gen. Char.—Anther double, embracing the style; filament erect, simple, not extending beyond the anther; inner limb of corolla unilabiate.

Spec. Char.—Filament deeply divided in two lobes, each antheriferous; style slender, erect, rising between the segments of the filament; lip broad, panduriform, obtuse, yellow, with red streaks diverging from the middle.

DESCRIPTION.

Stem cylindrical, erect, leaves lanceolate, inæquilateral, with a strong membranous margin; spike terminal, many-flowered, reclinate; flowers in pairs, outer limb of corolla in three segments, ovate, white, with pink margin; inner limb or lip panduriform, broad, intire, finely striated with crimson lines diverging from the middle; filament deeply divided in two segments, each segment antheriferous; style rising between the segments of the filament.

OBSERVATIONS.

The present figure is given from a Chinese drawing, in the collection of the Right Hon. Lord Stanley, at Knowsley. It has not hitherto been either figured or described, except in the notice of it in Linn. Trans. vol. ix. p. 281, and has probably never yet been introduced into Europe. The very singular construction of the parts of fructification, resembling rather a Diandrian than a Monandrian plant, might induce a doubt of its existence, did not the other parts of the inflorescence, and the general habit and appearance of the plant, demonstrate its authenticity, and characterize it as an *Alpinia*, beyond all possibility of suspicion. The peculiarity of this plant consists in the filament being deeply divided, or cloven into two segments, *(diffissa,)* from which its specific name is derived. The singularity of such a deviation from the rest of the Scitaminean tribe, is, however, somewhat diminished by our having observed a similar circumstance in the *Alpinia calcarata;* a flower of which appeared a few years since in the Botanical Garden at Liverpool, with a double filament, by which the two-lobed anther was divided, one lobe only being found on each portion of the filament; whether this may be the case with the *diffissa*, or whether each of the filaments bears a double anther, the figure now published does not enable us to determine.

Alpinia penniculata.

ALPINIA PENNICELLATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament erect, simple, not extending beyond the anther; inner limb of corolla unilabiate.

SPEC. CHAR.—Filament short, ovate; leaves lanceolate, strongly nerved; lip tubular, expanding into a broad, circular, undulate margin, bright yellow, with crimson streaks.

SYN.—Alpinia pennicellata. *Roscoe, in Linn. Trans.* xi. 280.

Alpinia pennicellata. *Smith, in Rees' Cyclop.*

DESCRIPTION.

Stem strong, erect, rufescent towards the base; leaves lanceolate, inæquilateral, strongly nerved, on short sheathing petioles; flowers in a terminal spike, bursting from the floral bracte, in loose depending panicles; calyx superior, in three leaves, white, tinged with green at the base and pink at the apex; outer limb of the corolla in three oblong, ovate sections, white, terminating in pink; inner limb of one petal, tubular, involute, but expanding towards the margin into a circular lip, regularly waved at the edge, and beautifully painted with equal crimson streaks diverging from the centre; filament very short, scarcely half the length of the lip, ovate at the apex, white; stigma projecting a little beyond the filament.

OBSERVATIONS.

Discovered amongst a series of Chinese drawings in the collection of the Right Hon. Lord Stanley, at Knowsley. From the calyx, the exterior segments of the corolla, and the splendidly coloured lip, we have no hesitation in deciding on its genus. Independent of the additions thus made to this beautiful tribe, we have been induced to give these figures in the present work, because we conceive they have been drawn from the living plants, and entertain some hopes that their beauty may induce those who may have an opportunity of investigating their native regions, to add to our present stores, by introducing them into this country.

Alpinia Nutans.

ALPINIA NUTANS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament simple, erect, not extending beyond the anther; inner border of the corolla unilabiate; capsule three-celled; seeds arilled.

SPEC. CHAR.—Flowers terminal; spike pendulous; lip broad-ovate, elongated towards the apex, crenate, and slightly bifid, furnished at the base with a pair of acute, subulate incurved spurs, or hornlets; leaves lanceolate, smooth, margins ciliate.

SYN.—Globba nutans. *Lin. Mant.* ii. 170. *Willd.* i. 153.

Globba nutans. *Redouté, Liliac.* i. 60.

Globba sylvestris. *Rumph. Amb.* vi. 62.

Zerumbet speciosum. *Jacq. Fragm. tab.* 68.

Zerumbet speciosum. *Wendland, Ser. Han. tab.* 19.

Costus Zerumbet. *Persoon, Synop.* 1. p. 3.

Catimbium. *Jussieu, Gen. Pl. Ed. Uster.* 1791.

Renealmia nutans. *Andr. Rep. tab.* 360.

Alpinia nutans. *Smith, Exot. Bot. tab.* 106.

Alpinia nutans. (Poora-nag-champa of the Hindoos.) *Roxb. Asiat. Res.* xi. 354. *Flor. Ind.* i. 64.

Alpinia nutans. *Roemer & Schultes, Syst. Veg.* 1.

Alpinia nutans. *Sprengel, Syst. Veg.* 1. 14.

DESCRIPTION.

Roots perennial, woody; stem erect, 8–10 feet high, covered with a short sericeous down; leaves linear-lanceolate, alternate, on short petioles, ciliated at the margin with tawny coloured hairs, length from 12 to 18, breadth from 4 to 5 inches; spike terminal, pendulous, inclosed in two large, coriaceous, deciduous bractes, the outer one acute, villous towards the apex, and sometimes terminating in a small leaf, the inner one ovate, and ciliated towards the apex; rachis and peduncles downy; floral bractes inferior, biflorous, bifid, coloured at the apex; calyx superior, permanent, campanulate, slightly divided, and of a beautiful pink colour at the apex; outer limb of the corolla of three ovate segments, of a fine, transparent, porcelain-like white, tinged towards the extremity with rose colour, the central or upper segment larger and more acute than the two lateral ones; inner limb or lip large, inflated, broad-ovate, elongated towards the apex, slightly bifid and crenate, bright orange colour, with streaks of deep crimson diverging from the centre towards the margin, furnished at the base with two acute, incurved spurs or hornlets; filament erect, strong, grooved, supporting the large bilobate anther; style filiform, tubular, supported at the base by two blunt, tooth-like, germinal processes; stigma funnel-shaped, margin ciliate; germen downy; capsule globular, striated, three-celled, three-valved; seeds globose, numerous, white, arilled.

OBSERVATIONS.

The history of this noble plant, which stands unequalled in elegance and beauty by any species of the rival genera of *Hedychium* or *Curcuma*, may serve to show, more perhaps than any other instance, the uncertainty which prevailed in the definition of plants of the order of *Scitamineæ*, before the improved system for the arrangement of that order was introduced. Of this no other proof is necessary than the list of synonims

prefixed to the present article, from which it appears, that this plant has been successively characterized, by different botanists, by the names of *Globba*, *Zerumbet*, *Costus*, *Catimbium*, and *Renealmia*, a proof that the real characters of such genera were not understood.

Plants of this fine species were first sent by Dr. William Carey to the Botanic Garden at Calcutta, where they flowered abundantly during the hot season, ripening their seeds in October and November. *Roxb. in As. Res.* 354. It is a native of the interior parts of Bengal, and is also found in Amboyna and other places. It was introduced, according to Sir J. E. Smith, into the English stoves in 1792, by Sir Joseph Banks, and flowering a few years afterwards, excited the admiration of all beholders. The number of figures which have been published of this plant, prove it a general favourite. *(Rees' New Cyclop.)* The figure now given, was drawn from a fine specimen in the Botanic Garden at Liverpool; the capsule, from a large and perfect spike in the Conservatory of Charles Lawrence, Esq. of Wavertree Hall, near Liverpool, where this plant has grown, and ripened its seeds in perfection for many years. Both the seeds and roots are slightly aromatic, and Dr. Roxburgh says the latter are sometimes carried to England for *Galanga Major*.

For the distinctive characters between this, and *Alpinia auriculata*, we must refer to the description of that plant in the present work.

REFERENCES.

1. Outer bracte, inclosing the spike.
2. Inner bracte.
3. Floral bracte.
4. Peduncle, capsule, and permanent calyx.
5. Seed.
6. Capsule opened, inclosing the seed.
7. Lip.
8. The three segments of outer limb of corolla.
9. Germen, filament, style and stigma, seen in front, with the hornlets.
10. The same seen on the back.
11. The same, showing the germinal processes.
12. The germen, with its processes, style and stigma.
13. Calyx.

Alpinia auriculata

ALPINIA AURICULATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament simple, erect, not extending beyond the anther; inner border of the corolla unilabiate; capsule three-celled; seeds arilled.

SPEC. CHAR.—Flowers terminal; spike pendulous; lip broad-ovate, crenate towards the apex, furnished at the base with a pair of involute, flat, auriculated glands, hairy beneath; leaves lanceolate, with a line of ferruginous hairs on each side the mid-rib below.

DESCRIPTION.

Roots woody, perennial; stem erect, villous, 10–14 feet high; leaves alternate, subsessile, inæquilateral, coriaceous, ciliated with ferruginous hairs on the margin, and on each side the mid-rib below, two feet long, by 4–6 inches broad; petiole short, with a ligulated stipule, or *ocrea;* spike terminal, pendulous; rachis angular, red, with white hairs; peduncles one-flowered; proper bracte inflated, bifid, striated, apex rose-coloured; calyx superior, tubular, trifid, segments coloured; outer limb of the corolla in three segments, the lateral ones linear, obtuse, converging, white and rose colour, the center one larger, incurved over the filament, and opposite to the lip; inner limb or lip broad-ovate, concave, undulated towards the apex, bright yellow, beautifully striated with crimson streaks diverging from the middle; at the base of the corolla are two broad, flat, auriculated glands, spotted with crimson on the upper side, and covered with white hairs beneath; filament short, simple, covering the back of the anther, but not extending beyond it; anther double, ovate, attached to the filament its whole length, opposite to the lip; style filiform, downy towards the apex, with two short, blunt, subulate processes at the base; stigma concave, margin ciliated; germen globose, hairy; capsule striated, three-celled; seeds numerous, globular, arilled.

OBSERVATIONS.

In general habit and appearance *Alpinia auriculata* approaches nearest to *Alpinia nutans,* but is immediately known by the lip, which in the former is scarcely more than half the size of the latter, and is nearly orbicular, and not elongated towards the apex; it also varies in its beautiful pennicellated colouring, which leaves a whitish crescent-shaped space on each side of the lip; at the base of the lip are the two flat auriculated processes, from which it obtains its name, whilst the same part in *nutans* exhibits two subulate incurved spurs. In *auriculata* the mid-rib on the under side of the leaf has a line of dense ferruginous hairs on each side, extending the whole length, which is not found in *A. nutans,* although the downy or ciliated margin of the leaf is common to both. These distinctions mark the present plant as a separate species, without the possibility of a doubt.

This beautiful plant, which, before it flowered, was supposed to be the *Alpinia nutans,* was sent to the Botanic Garden, in Liverpool, by Mr. William Anderson, gardener to James Vere, Esq. Kensington Gore, in 1815; but did not flower till the beginning of April, 1824, when it also ripened its seed. It is now, for the first time, named and figured. Like the nutans, it is probably a native of the Southern Islands of Asia.

REFERENCES.

1. Segments of exterior limb of the corolla.
2. Outer bracte.
3. Interior limb of corolla, or lip.
4. Filament, anther, and style.
5. The same seen on the back.
6. Filament and anther, with the auriculated glands slightly magnified.
7. Germen and style, with the glandular processes at the base.
8. Calyx.
9. Capsule intire.
10. Ditto as it opens.
11. Seed.
12. General flower-sheath.

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Alpinia magnifica

ALPINIA MAGNIFICA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament erect, simple, not extending beyond the anther; inner limb of corolla unilabiate.

SPEC. CHAR.—Scape lateral; flowers aggregate, numerous, on a common receptacle; lip narrow, linear, ovate at the apex, scarlet, bordered with white; filament and style downy.

DESCRIPTION.

Stem erect; leaves alternate, on short petioles, linear-lanceolate, æquilateral, strongly nerved; scape lateral, erect, covered with alternate, ovate, rufescent bractes; floral bractes five or six, broad-lanceolate-acute, scarlet, with a white margin; general calyx long, linear, ovate, and sometimes mucronate at the apex, scarlet, bordered with white, enclosing the general receptacle; florets numerous, 50—100, sitting on a common receptacle, and forming together a regular cone; filament about an inch long, and one-tenth broad, linear, flat, downy, supporting at its extremity the double anther; style simple, downy, rising from the germen, and supported at the base by two broad, tooth-like processes; stigma a ciliated cup; outer limb of the corolla sitting on the germen, divided into three irregular, ovate sections; inner limb or lip somewhat larger, ovate, bright scarlet, and bordered on the margin with white; diameter of the intire flower about eight inches.

OBSERVATIONS.

This very singular and magnificent species of Alpinia, now for the first time published, is a native of the Mauritius, where a drawing was made of it in the year 1826, by Charles Telfair, Esq. This drawing came into the hands of Robert Barclay, Esq. of Buryhill, whose exertions in introducing new and beautiful plants into this country are so well known, and who most obligingly entrusted it to the care of my highly esteemed friend Dr. Hooker, Professor of Botany in the University of Glasgow, to be conveyed to me for the use of the present work. This was also accompanied by specimens of the flowers well dried and preserved; by the immersion of a floret of which in tepid water, I was enabled to distinguish, to my equal surprise and satisfaction, the genus of the plant, so as to include in my series of Scitamineæ what I little expected, an aggregate or compound flower, surpassing, in the splendour of its appearance, every other of the tribe hitherto known.

These dried specimens were accompanied by leaves different from those in the drawing of Mr. Telfair, and which evidently appeared to be those of a fine new species of *Zingiber*, with a large conical spike, of which a drawing was also made by Mr. Telfair; but which, not being accompanied by the details of the flowers, cannot be decided on with sufficient certainty for the present work.

REFERENCES.

1. Exterior floral bractes.
2. A single bracte of the same series.
3. One of the leaflets of the calyx.
4. A single floret, shewing the three sections of the exterior limb of the corolla, and the interior limb or lip, with the filament and anther, stile and stigma, in position.
5. Filament and anther separate.
6. Germen, with its processes, style and stigma separate.

Hedlenia cærulea.

HELLENIA CÆRULEA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament extended beyond the anther, with an ovate or bilobate crest; interior limb of the corolla unilabiate.

SPEC. CHAR.—Apex of the filament ovate; lip trilobate; middle segment slightly notched at the apex; spike loose, conical, declined; leaves lanceolate, inæquilateral.

DESCRIPTION.

Root thick and woody, taking strong hold of the ground; stem erect, from 6 to 8 feet high; leaves alternate, lanceolate, inæquilateral, dark green, purpurescent towards the apex; petioles very short, channelled, closely sheathing the stem, and terminating in an ovate, ligulated stipula, with a red spot at the base; spike terminal, declined; peduncles alternating on the rachis, triflorous; common bractes deciduous, proper bractes inferior, one to each flower; calyx superior, sheathing the tube of the corolla its whole length, apex bifid, slightly hirsute, with an interior calyx or scale; exterior limb of corolla in three nearly equal segments, the two lower ones declined under the lip, the upper one erect, and slightly hooded over the apex of the filament, white; inner limb unilabiate, slightly trilobate, centre lobe bifid, with two small spurs or hornlets at the base, and supported on a long, narrow, channelled claw; filament linear, erect, red, terminating a little beyond the anther in a simple ovate lobe; anther in two distinct lobes; style erect, hirsute, rubescent, received between the bilobate anther, but scarcely reaching its apex, supported at the base by two green obtuse glandular processes; stigma concave, with a ciliated margin; capsules green, but becoming a light blue when ripe, trilocular; seeds angular, red, arilled.

OBSERVATIONS.

The name of *Hellenia*, intended to honour Professor *Hellenius* of Abo, was first applied by Retzius to the plant now called *Costus speciosus;* but that plant having already been named, Willdenow abolished the name of *Hellenia*, as applied to it, and gave the same name to another tribe of Monandrian Plants, the *Languas* of Kœnig, which Retzius had named *Heretiera*. In my Dissertation on Monandrian Plants, in *Lin. Trans.* vol. viii. I have referred these plants to Alpinia; but Mr. Brown having, in his *Prodromus Floræ Novæ Hollandiæ*, &c. p. 307, described another species of this genus, which appears to be distinguished from *Alpinia*, by the filament being extended beyond the anther, to which he has given the name of *Cærulea*, I am happy in the opportunity of coinciding in his opinion, that this genus should, for the reasons he has given, be retained;* and of confirming the same by the figure here given, from a plant which flowered in May 1824, in the Botanic Garden at Liverpool, and which perfected its seeds there. For this very elegant plant the Liverpool Garden is indebted to the liberality of the Honourable and Rev. William Herbert.

REFERENCES.

1. The corolla intire.
2. The same seen at the back.
3. The lip, with the hornlets at the base.
4. The filament projecting beyond the anther.
5. Exterior border of corolla, the upper segment covering the filament.
6. The hirsute style.
7. Calyx.
8. Inner do.
9. Spike in fruit.
10. Capsule.
11. Seed.

* "*Helleniæ* proxima est *Alpinia*, quæ differt filamento ultra antheram non producto, et capsulæ texturâ."—*Brown. Prodrom.* p. 308.

Costus spicatus

COSTUS SPICATUS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament extended beyond the anther, terminating in an ovate or lanceolate apex; capsule three-celled; seeds numerous.

SPEC. CHAR.—Stem cylindrical, rising spirally; leaves broad-lanceolate, smooth; petioles short, with a coloured stipule or *ocrea;* spike terminal, closely imbricate; bractes red at the base; flowers yellow; lip obscurely trifid, undulate, or crenate, at the apex; stigma two quadriform lips, ciliated, with a separate bifid membranous process at the back.

SYN.—Alpinia spicata, *Jacq. Plan. Am. tab.* 1.

Costus spicatus. *Smith, in Rees' Cyclop.*

DESCRIPTION.

Roots tuberous; stem cylindrical, ascending in an oblique or spiral form; leaves alternate, broad lanceolate, smooth, intire; petioles very short, with a strictly ligulated *ocrea,* rufescent at the margin; spike terminal, sitting on four leaves, closely imbricated; outer bractes broad, ovate, concave, coriaceous, dark red at the base; inner bractes smaller, membranaceous; calyx tubular, nearly an inch in length, trifid at the apex; tube of the corolla short, outer limb in three sections, broad-ovate, the middle section rather larger; inner limb or lip about three inches long, and two in breadth, trilobate at the apex, the lobes crenate, or fringed; faux hairy; filament broad, flat, petal-like, extending much beyond the anther, and terminating in an ovate, reflexed apex; anther in two large lobes, protected by a membranous hood, and attached by the back to the middle of the flat surface of the filament; style filiform, tubular, without the germinal processes at the base, embraced by, and rising just beyond, the anther; stigma two quadriform, compressed lips, finely ciliated, somewhat concave in front, accompanied at the back by an erect white membranous process, bifid at the apex; germen ovate, downy, three-celled; seeds numerous.

OBSERVATIONS.

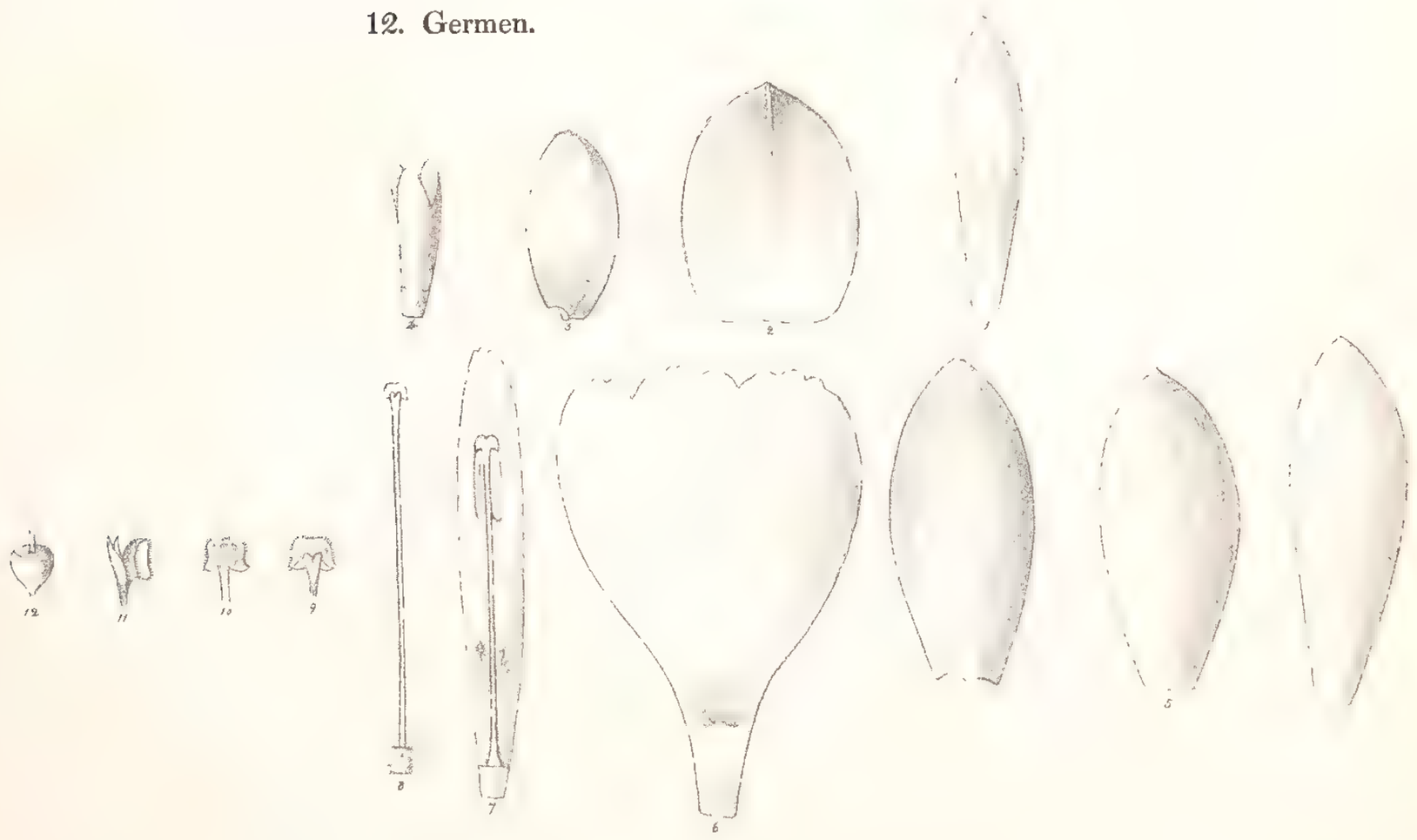
Of this plant, a very inadequate figure is given by Jacquin, in his early work on the Plants of America, under the name of *Alpinia spicata.* Although it has been for several years in the Botanic Garden at Liverpool, it has not yet flowered there. The present figure is therefore given from a drawing made from a native specimen in the island of Grenada, in the year 1780, by General Thomas Davies, and now in the collection of the Right Hon. Lord Stanley, at Knowsley. To this drawing, the details of the flower are wanting; but it has fortunately occurred, that soon after the present figure was prepared for publication, I received, through the kindness of my friend Dr. Traill, a fine specimen of a flowering spike of this species, preserved in spirits, sent by Charles Parker, Esq. from Martinique, from which I have been enabled minutely to describe this singular plant, which differs in several respects from most others of the Scitaminean tribe, and particularly in the style, which is not accompanied

at the base by the usual subulate germinal processes, and in the stigma, which has a bifid process rising from the apex of the style, at the back of, and connate with the lips of the stigma; which, it is not improbable, answers the same purpose in this genus, as the subulate processes at the base of the style do in other genera. That the same apparatus exists in other species of Costus, appears from Dr. Roxburgh's description of *C. speciosus (in Flor. Ind.* 1. 57.) "The stigma consists of two broad glutinous lips, which gape wide while the pollen is shedding; between them is evidently seen, with the naked eye, the mouth of the perforated style; on the back of the upper lip are seen the *two* white glands mentioned by König. I impute his not taking notice of the two large lips of the stigma, to his having examined the flowers some time after they were gathered, when they coalesce."

The inhabitants of Martinique make a decoction of the stems and roots, which they esteem a salutary and refreshing beverage.

REFERENCES.

1. Flower before it opens.
2. Outer bracte.
3. Inner bracte.
4. Calyx.
5. Sections of upper lip.
6. Lower lip of corolla.
7. Filament and anther.
8. Style and stigma.
9. Stigma.
10. Ditto in front,
11. Ditto in profile,
} slightly magnified.
12. Germen.



8. 7. 6. 5. 4. 3. 2. 1.

Costus cylindricus

COSTUS CYLINDRICUS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, attached to the front of the petal-like filament; filament extending beyond the anther, ovate, intire; inner limb of corolla unilabiate; capsule three-celled; seeds numerous.

SPEC. CHAR.—Stem cylindrical, spiral; ocrea fimbriate; leaves broad-lanceolate-obtuse, inæquilateral, glaucous below; spike cylindrical, crimson; flowers yellow; lip rhomboid.

SYN.—Paco-caatinga. *Marcgrav. Brasil,* lib. i. cap. 23. p. 49.

Paco-coatinga, caule spirali minor. *Plum. Hist.* v. 30.

Costus comosus. *Roemer & Schultes,* i. p. 25. q.

Costus cylindricus. *Ib.* i. p. 26.

DESCRIPTION.

Root tuberous; stem cylindrical, spiral, six feet high or upwards; leaves alternate, broad-lanceolate-obtuse, about five inches long, inæquilateral, glaucous below; petioles very short, terminating in an ocrea fimbriated with strong white threads surrounding the stem; spike terminal, cylindrical, 5–7 inches long, declined; bractes numerous, closely imbricate; outer bracte of a rhomboidal form, bright scarlet; flowers expanding in succession, dull yellow; outer limb of corolla in three segments; outer segments ovate, equal; inner limb or lip rhomboidal, concave, larger than the segments of the outer limb; the faux or nectarium composed of a mass of orange-coloured succulent fibres; filament spatulate, ovate, and intire at the apex; anther placed in front below the apex, of two lobes, naked; style strong, cylindrical, nearly the length of the filament, naked at the base; stigma cup-shaped, compressed so as to resemble two lips with ciliated margins, supported by two short, blunt processes; capsule three-celled; seeds numerous.

OBSERVATIONS.

The arrangement and history of this genus have been attended with considerable difficulty; but that our plant is the Paco-coatingo of Piso, caule spirali minor of Plumier, there cannot be any doubt. We are possessed of a plant of it in the Botanic Garden at Liverpool, sent us by the late Baron de Schack, from Trinidad; but this not having yet flowered, we have had recourse, on the present occasion, to a fine specimen brought by Charles S. Parker, Esq. from the same place, the fruit and flowers of which were preserved in spirits, and enable us to give the most satisfactory details of the fructification; beautifully conforming to the generic character, which distinguishes this from every other genus of Monandrian Plants, in having the appendages or processes usually found at the base, placed at the summit of the style.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Intire flower.
4. Sections of outer limb of corolla.
5. Inner limb of corolla, or lip and nectary.
6. Filament, anther, style and stigma.
7. Style and stigma separated.
8. Stigma, with its two blunt processes, magnified.

Costus spiralis

COSTUS SPIRALIS.

MONANDRIA MONOGYNIA.

SECT. II.—SCITAMINEÆ.

GEN. CHAR.—Anther double, attached to the front of the petal-like filament; filament extending beyond the anther, entire; interior limb of corolla unilabiate; capsule three-celled; seeds numerous.

SPEC. CHAR.—Stem cylindrical; ocrea short, simple; leaves lanceolate-obtuse, inæquilateral, smooth on both sides; mid-rib slightly downy on the upper side; spike ovate, imbricate, scarlet; lip ovate, concave, entire, claw narrow; flowers rose colour.

SYN.—Jacuacanga, aliis Paco caatinga, Piso, *Hist. Nat. Brazil*, cap. 60. p. 98. Amst. 1648. Caulis internodiis rarioribus et mollioribus distinctus, amplis et crassis foliis est conspicuus; è cujus vertice compactus squamatus, figura pyramidali et speciosa rubescens flos progerminat.

Costus Pisonis. *Bot. Reg.* fig. 899. Capitulus terminalis, ovi columbini magnitudine, squamis sanguineis imbricatus, pauciflorus, flores, rosei magni, è squamis erumpentes, citò decidui.

DESCRIPTION.

Stem cylindrical, spiral, smooth, about two feet in height, leaves alternating on the stem in an ascending circle, about six inches in length, broad-lanceolate-obtuse, inæquilateral, smooth on both sides, slightly downy on the upper mid-rib; petioles short, smooth; ocrea simple; spike terminal, oval, erect; outer bractes ovate, acute, upper ones largest, imbricate, deep scarlet; calyx tubular, three-toothed, scarlet; outer limb of corolla in three segments, the upper one the largest, the two lower ones of equal size; inner limb ovate, mucronate at the apex, with a narrow linear claw, flowers rose colour; filament erect, ovate, pointed; lobes of the anther white, linear, placed in front of the filament, about one-third its length below the apex; style strong, cylindrical, smooth, extending a little beyond the anther, naked at the base, but terminating with two blunt processes, supporting the stigma; stigma a compressed cup, with a ciliated margin; germen ovate; seeds numerous.

OBSERVATIONS.

The Editor of the Botanic Register (fig. 899 of that work) is undoubtedly correct in considering the plant which he has there figured, as being entirely different from the *Alpinia Spicata* of Jacquin, which is also figured in the present work under the name of *Costus Spicatus;* but whether it may be different from the *Costus Spiralis* of other authors, seems not to have been hitherto ascertained. There are in fact three species of the American genus of *Costus*, viz. the *comosus*, the *spiralis*, and the *cernuus*, all of which have an ovate, imbricated, compact spike, with scarlet bractes and rose-coloured flowers; one of which is undoubtedly that figured in the *Bot. Reg.* These species are believed to be all now in the Botanic Garden at Liverpool, although only one of them has yet flowered, and this we conceive to be the same as that figured in the *Bot. Reg.* This species was introduced from the Brazils, to the Botanic Garden at Liverpool, by Richard Harrison, Esq. of Aighburgh, where it has flowered, and is considered to be the true *spiralis.* Two other specimens under the same name have been received at the Botanic Garden, but have not yet flowered; one from the late Baron de Schack, at Trinidad, the other from Mr. Otto, at Berlin.

We fully agree with the Editor of the *Bot. Reg.* that our plant is the Jacuacanga of Piso, the wood print of which is repeated by Marcgrave, for his *Paco Caatinga;* which, however, is not the same plant, but is, we conceive, the *Costus Cylindricus* of the present work.

REFERENCES.

1. Sections of outer and inner limb of corolla.
2. Calyx.
3. Calyx and flower before expansion.
4. Upper part of style, with the hornlets and stigma magnified.
5. Germen, style and stigma, natural size.
6. Filament and anther, natural size.

Costus c. Vijadensis.

COSTUS NIPALENSIS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, attached to the front of the petal-like filament; filament intire, extending beyond the anther; stigma supported by two fleshy processes; interior limb of corolla unilabiate; capsule three-celled; seeds numerous.

SPEC. CHAR.—Leaves lanceolate-obtuse, downy below, ocrea coloured, fimbriate; calyx campanulate, trifid at the apex, deep purple; outer limb of corolla in three broad-lanceolate segments, bright pink; inner limb crenate, white; filament ovate, hairy on the back; stigma with two blunt fleshy processes.

SYN.—Costus speciosus (var. B.) angustifolius. *Bot. Reg.* No. 655.

DESCRIPTION.

Root of thick fleshy tubers, stem from four to five feet high, ascending spirally; leaves alternate, lanceolate-obtuse, terminating in a filiform point, smooth above and downy below, on very short concave petioles; ocrea rubescent at the margin, and ciliated with long white hairs; spike terminal, capitate, imbricate; flowers expanding in succession; outer bracte ovate, bright purple; calyx superior, persistent, campanulate, apex in three lanceolate, mucronate, erect, deep-purple segments; outer limb of corolla in three segments; segments ovate-lanceolate, mucronate, bright pink; inner limb, or lip, very large, undulate, crenate, transparent, white; faux of the corolla, or nectary, beset with yellow succulent fibres; filament ovate, intire, revolute at the apex, smooth on the front, but covered at the back with long white hairs; anther placed on the front surface of the filament, about half-an-inch below the apex, imbedded in its proper receptacle; style strong, erect, naked at the base, the length of the filament; stigma tubular, compressed, with quadrangular lips, finely ciliated, and supported at the back by two short blunt horns or processes; capsule ovate, three-celled; seeds numerous.

OBSERVATIONS.

We have no hesitation in acceding to the opinion of Dr. Wallich, as recorded in *Bot. Reg.* p. 665. that this is "a new species of *Costus* from Nipal,"* and not merely a variety of the Costus speciosus, with a plant of which we have had an opportunity of comparing it in the Botanic Garden at Liverpool, and find it to differ in many essential respects. In particular, the *speciosus* is a plant of much larger growth, being from eight to nine feet high, whilst the Nipalensis scarcely attains half that height. In the Speciosus the leaves are broad-lanceolate, about six inches long, and four broad; but in our plant the leaves are lanceolate-obtuse, or broadest towards the apex, about a foot long, and at the widest part not more than three inches broad. The plant of the Speciosus in the Liverpool Garden has not yet flowered; but in comparing our present figure with that of the *speciosus* as given by Jacquin, *(Pl. rar. vol.* i. *tab.* i.*)* we find the exterior limb of the corolla in the *speciosus* is white, in ours it is a beautiful bright rose-colour, whilst in Nipalensis the interior limb of the corolla is a pure transparent white, but in the Speciosus flesh-coloured.—We doubt not that when we have an opportunity of comparing the more immediate parts of fructification of these plants, still more striking distinctions will be obtained, but these are sufficient to show that the present must be considered as a distinct species, and not as a mere variety.

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* The name of this country (which will be found differently written in the present work, as following the text from which the quotation is made) "is written in Sungskrita Dictionaries N*e*pala, and N*i*pala, with the *i* sounded long, as in *time*, and the final *a* is not pronounced." The editors of Dr. Roxburgh's Flora Indica have finally adopted N*i*pal, "as most agreeing with the pronunciation in the country itself." v. *Fl. Ind. vol.* ii. *p.* 89.

For living plants of this beautiful species, the Liverpool Botanic Garden has been indebted to the Hon. and Rev. William Herbert, to Dr. Wallich, of Calcutta, and to the London Horticultural Society. It expands its flowers freely, and continues them in succession for a considerable length of time.

REFERENCES.

1. Calyx.
2. Lip.
3. Outer bracte.
4. Intire flower.
5. Sections of exterior limb of corolla.
6. Germen, calyx, and filament seen at the back.
7. Filament seen in front, and anther.
8. Anther magnified.
9. Style and stigma, natural size, and magnified.
10. Germen magnified.

Costus discolor

COSTUS DISCOLOR.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, attached to the front of the petal-like filament; filament extending beyond the anther, ovate, intire; inner limb of corolla unilabiate; capsules three-celled; seeds numerous.

SPEC. CHAR.—Stem cylindrical, ocrea smooth; leaves broad-ovate, obtuse, æquilateral, smooth on both sides, purpurescent beneath; spike ovate, imbricate; bractes purple at the base, green at the apex; flowers white.

DESCRIPTION.

Roots tuberous, spreading; stem cylindrical, spiral, smooth, four feet high; leaves alternating on the stem in an ascending circle, broad-lanceolate, strongly nerved, æquilateral, smooth on both sides, green above, purple below; petioles very short, smooth; ocrea ciliated with fine hairs; spike terminal, oval, declining; outer bractes laxly imbricate, ovate, crimson at the base, green at the apex, and sometimes foliaceous; calyx tubular, three-toothed, scarlet; flowers large, white, generally expanding in pairs; outer limb of corolla in three segments, lanceolate, nearly equal; inner limb or lip oblong, trilobate, waved at the margin, and slightly tinged with yellow in the middle, with the nectarium at the base; filament oblong, resembling in shape an Egyptian Mummy, scarlet for upwards of three-fourths its length, white at the apex; anther of two yellow lobes, naked, placed on its proper bed in front of the filament, and about one-third distant from the apex; style strong, cylindrical, naked at the base, extending beyond the anther, but shorter than the filament; stigma a compressed cup, with ciliated margin supported by the two hornlike, pointed appendages peculiar to the genus.

OBSERVATIONS.

This beautiful species of Costus was introduced by Mr. Newman, from Maranham, and received from Mr. Lee of Hamersmith, at the Botanic Garden in Liverpool, where it has repeatedly flowered. In specific arrangement it may be ranked with those which flower in a loose spike, and is most nearly related to *Speciosus* and *Nipalensis*, from which it is, however, sufficiently distinguished by its peculiarly shaped filament, and the contrasted green and scarlet colour of its leaves, which has induced us to give it the name of *Discolor*.

REFERENCES.

1. Outer floral bracte.
2. Inner do.
3. Calyx.
4. Germen and filament, anther, style and stigma.
5. Style and stigma detached.
6. Stigma, with its appendages in profile, magnified.
7. Stigma, without its appendages, do.
8. Outer limb of corolla.
9. Inner do. in its tubular form.
10. Ditto, expanded.

Costus maculatus

COSTUS MACULATUS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, attached to the flat surface of the petal-like filament; filament intire, extending beyond the anther; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike radical; scape short-jointed; bractes imbricate, green; stems hairy, spotted with red; leaves lanceolate, smooth on the upper surface, villous below; lip ovate, fimbriate, white, with two yellow stripes from the base to the apex.

SYN.—Costus Afer. var. (*3*) Rough Sierra Leone Costus. *Bot. Reg.* p. 684?

DESCRIPTION.

Roots tuberous; stems cylindrical, spiral, 12–18 inches high, very hairy, marked near the joints with red spots; leaves alternating according to the course of the stem, lanceolate, smooth on the upper surface, but villous below; petioles short, concave, hairy, terminating in a short ligulated sheath or *ocrea;* spike radical, jointed, about three inches high, capitate, imbricate; flowers expanding in succession, and only in perfection one day; scape hairy; bractes ovate, obtuse, green; calyx superior, of one leaf, tubular, trifid at the apex; corolla monopetalous, with a double limb; outer limb in three nearly equal, ovate, white segments, one of them reflected; inner limb or lip broad-ovate, crenate, or fimbriate, and expanding towards the apex, with two broad yellow streaks down the middle, and a tuft of yellow filaments in the faux; filament simple, ovate, petal-like, erect, intire, reflexed at the apex; anther double, placed in the centre of the filament, rather nearer the apex than the base; style rising from the germen, without the subulate processes at the base, strong, erect, terminating in a lunate, concave, two-lipped, compressed, ciliated stigma, which is supported at the back by a membranous, erect appendage, slightly bifid at the apex; germen ovate, smooth.

OBSERVATIONS.

Although this plant, which we have here denominated *Costus maculatus,* differs from the plant figured in Bot. Register, No. 683, as *Costus Afer* var. (a) by the striking peculiarity of flowering by a scape, immediately from the root, whilst the flower of *Costus Afer* is terminal; yet it is not for this reason alone, that we have been induced to consider it as a distinct species, there being other and perhaps more important characters, which have concurred in this decision. These diversities are founded on the intire habit of our plant, which will sufficiently appear on comparing it with the figure given in Bot. Reg. That this is, however, one of the plants referred to in the *Bot. Reg.* p. 684, as having been introduced by Mr. George Don, Collector to the Horticultural Society, we have no doubt; but we cannot assent to the opinion there expressed, that it is only a variety of the species there given. Probably if the plant here figured had flowered when such decision was formed, it might have induced a further consideration; for although we may not suppose a radical or terminal inflorescence sufficient, in itself, to indicate a species, yet we know not, as yet, of any instance among Scitaminean plants, where this distinction, amongst others, has not characterized one; and we are not prepared to say, that the different economy by which a plant produces its fruit immediately from the root, or at the termination of its branches, is not always accompanied, as in the present instance, by other striking diversities, which may justify us in making a more decided distinction than the mere term of variety seems to imply.

This plant was presented by the Horticultural Society to the Botanic Garden in Liverpool, and flowered 15th February, 1825.

REFERENCES.

1. Germen, calyx, style and stigma,
2. Ditto, seen at the back, with the bifid glandular process, } slightly magnified.
3. Filament and anther.
4. Bracte.
5. Corolla seen in front.
6. Ditto at the back.
7. Lip.
8. The three sections of outer limb of corolla.

Zingiber officinale.

ZINGIBER OFFICINALE.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, filament extending beyond the anther in an awl-shaped, grooved beak, embracing the style.

SPEC. CHAR.—Spike radical, bractes ovate, obtuse; margins membranaceous; lip in three segments, middle segment ovatè, slightly notched; leaves narrow, linear-lanceolate.

SYN.—Amomum Zingiber. Linn. Sp. Pl. Willd. 1, 6.
Inschi Kua. Rheed. Hort. Mal. 11, 21. tab. 12.
Zingiber Majus. Rumph. Amb. 5, 156. tab. 66. f. 1.
Amomum Zingiber. Jacq. Hort. Vindob. v. 1. tab. 75.
Ada, or *Adrac*, of the Hindoos and Bengalese. Roxb. Flor. Ind. 1, 46.
Common Ginger.

DESCRIPTION.

Root creeping; *tubers* palmate, fleshy, becoming fibrous; *stem* annual, single, erect, about two feet high; *leaves* alternate, on short decurrent petioles, with a bifid stipulary ligula, narrow, intire, linear-lanceolate, 6–12 inches long, æquilateral; *scape* radical, erect, round, covered with long obtuse scales, the uppermost of which sometimes terminate in leaves, 10–12 inches high; *spikes* solitary, erect, club-shaped, compact; *bractes* broad, ovate, imbricated, green, striated, with a yellow membranaceous margin; *calyx* tubular, three-toothed; *corolla* with a double limb; *outer limb* of three lanceolate segments, one rather larger, erect, the other two declined below the lip; *inner limb* or *lip* ovate, slightly notched, purple, with light spots, and two short lateral acute teeth or segments; *filament* extending beyond the anther, in an awl-shaped beak, grooved, and embracing the style; *anther* double, large, ovate; *style* filiform, with two subulate pointed processes at the base; *stigma* a compressed ciliated cup.

OBSERVATIONS.

We are informed by Dr. ROXBURGH, Flor. Ind. vol. I. p. 46, that this plant, although universally known and cultivated over all the warmer parts of Asia, is very rarely found in a flowering state, and that he had never seen the seeds. Sir JAMES E. SMITH also has observed, that it has not been found practicable to procure any specimen, or account of the fruit, which, from the great increase of the roots, he conceives is not often perfected.

The plants in the Botanic Garden at Liverpool have not ripened their seeds; but we are informed that the fruit is a smooth fleshy capsule, three-cornered and three-valved, with many oblong arilled seeds. Hort. Jam. p. 393.

The ginger has long been introduced from the East into the West Indies, and particularly into *Barbadoes* and *Jamaica*, where it is extensively cultivated, and forms an important article of commerce.

"When the root is intended for a sugar preserve, it is dug while tender and full of juice. The stems at this time rarely exceed five or six inches in height. The root is carefully picked, washed, and afterwards scalded, till it is sufficiently tender. It is then put in cold water, and peeled and scraped gradually. This operation may last three or four days, during which it is commonly kept in water, and the water frequently shifted, as well for cleanliness as to extract more of the native acrimony. After this preparation it is laid in unglazed jars, and covered with a thin syrup, which in two or three days is shifted, and a richer put in. This is sometimes again removed, for a third or fourth; but more than three are seldom requisite. The shifted syrups are not lost, for in Jamaica they are diluted with water, and fermented into a pleasant liquor, called cool-drink, with some mixture of the chaw-stick, lignum-vitæ, and sugar."—*Long's History of Jamaica.*

REFERENCES.

1. Outer bracte.
2. Inner bracte and corolla.
3. Anther and style.
4. Lip.

Zingiber zerumbet.

ZINGIBER ZERUMBET.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extending beyond the anther, in a subulate grooved beak, embracing the style.

SPEC. CHAR.—Scape lateral; spike strobiliform; bractes broad-ovate, ciliated at the margin; lip broad, crenate, with two lateral lobes, and notched at the apex; leaves lanceolate; flowers pale straw-colour.

SYN.—Katu-Inschi-Kua. *Rheed. Mal.* xi. p. 27. *tab.* 13.

Amomum zerumbet, scapo nudo, spica oblonga obtusa, squamis subrotundis, foliis ovatis, margine glabris. *Willd.* i. 6.

Amomum spurium. *Gmelin*, i. p. 6. *Dryander, in Linn. Trans.* 2—213.

Amomum zerumbet. *Jacq. Hort. Vind.* v. iii. p. 30. t. 54.

Zingiber spurium. *Konig. in Retz. Obs.* iii. 60.

Zingiber zerumbet, bracteas ovate obtuse; outer segments of the corolla straight, centre of the lip cloven. *Smith, Exot. Bot.* v. ii. p. 105. *tab.* 112.

Zingiber zerumbet. *Smith, in Rees' Cyclop.*

Zingiber zerumbet. *Roemer & Schultes*, i. 23.

Zingiber zerumbet. *Roxb. Flor. Ind.* i. 47.

Zingiber zerumbet. *Sprengel*, i. 12.

DESCRIPTION.

Root tuberous, biennial, externally whitish, internally pale yellow, with an acrid slightly aromatic taste; stems annual, 3–4 feet high, invested in the sheaths of the leaves; leaves bifarious, sessile, broad-lanceolate, intire, deep green above, paler beneath, with a ligula or sheath rising above the leaf, and embracing the stem; scape rising from the root, from one to two feet high, closely invested in a series of imbricated sheaths, villous at the edges; spikes ovate, imbricate, dark green, producing their flowers in succession; bractes broad, sub-orbicular, coriaceous; calyx superior, membranaceous, trifid; corolla with a double limb, exterior limb deeply divided into three segments, the larger one erect, concave, the two lower ones long, linear, equal, extending below and supporting the lip; interior limb or lip of one petal, deeply divided into three lobes, the central lobe bifid at the apex; the whole of the lip finely crenate, and, as well as the outer limb, of a pale delicate straw-colour; filament erect, supporting the anther, and extending beyond it in a grooved beak; anther broad, embracing the style; style slender, extending beyond the filament, and supported at the base by two blunt processes; stigma a minute ciliated cup.

OBSERVATIONS.

This plant has long been an inhabitant of this country, having been brought from the East Indies, and cultivated in the Royal Garden at Hampton Court, in 1690. *Hort. Kew*, i. p. 6. It is still found wild in the woods about Calcutta, ripening its seeds in November and December. *Flor. Ind.* i. 47.

Although this plant has not been found to have any medical qualities, it has been supposed, as its name implies, to have produced the true Zerumbet; but Mr. Colebrooke has shown, that in this respect Van Rheede was misled by the Brahmins who assisted him, and that Rumphius mistook it for the Galangal. "It bears more resemblance to the Cassumunar." Vide *Note on Dr. Roxb. Monandrous Plants, in Asiat. Res.* xi. 346, 7.

REFERENCES.

1. Intire flower.
2. Exterior limb of corolla.
3. Interior limb or lip.
4. Germen, processes, style and stigma.
5. Filament, anther, and subulate beak.
6. Inner bracte.
7. Upper part of outer bracte.

Zingiber Cassumunar

ZINGIBER CASSUMUNAR.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extending beyond the anther in a subulate grooved beak, embracing the style.

SPEC. CHAR.—Scape radical, lateral, invested in a series of downy sheaths; spikes strobiliform; bractes sub-orbicular, purpurescent, villous towards the apex; outer limb of the corolla pale straw-colour; lip deeply divided in two lobes, crenate.

SYN.—Zingiber Cassumunar. *Rox. in As. Res.* v. xi. 347. *Flor. Ind.* i. p. 3.
Bun ada. *Hind. & Beng.* (wild ginger.) *Ibid.*
Karpushpoo. *Teling.* (small Turmeric.) *Ibid.*
Zingiber Cassumunar. *Smith, in Rees' Cyclop.*
Zingiber purpureum. *Roscoe, in Trans. Lin. Soc.* v. viii. p. 348.
Zingiber purpureum. *Roemer & Schultes,* v. i. p. 24.

DESCRIPTION.

Root perennial, with large, jointed, striated, oblong tubers, of a deep orange colour within, and numerous, long, white, succulent fibres, striking deeply into the earth; stems simple, annual, from 4 to 6 feet high; leaves alternate, sessile, distic, linear-lanceolate, from 12 to 18 inches long, dark green, and smooth above; paler and villous below; sheathing of the leaves slightly hairy, with sharply ciliated margins; scape lateral, from 12 to 14 inches high, with 5 or 6 imbricated, ferruginous, villous bractes; spike an oblong cone, closely imbricated by a series of large, broad, ferruginous villous bractes, with paler membranous margins, ciliated towards the apex; inner bracte broad ovate, bifid; calyx superior, sheathing the tube of the corolla three-fourths its length, opening obliquely, smooth, white; outer limb of corolla in three segments, unequal, the upper section erect, boat-shaped, projecting over the beaked filament, the two under sections narrow, linear, equal, extending under and supporting the lip; inner limb or lip in three lobes, the lateral lobes equal, ovate, but terminating in an acute apex, the central lobe much larger, deeply bifid, and emarginate or crenate at the apex; the intire flower of a pale sulphur colour; filament projecting beyond the anther, in a subulate grooved beak; anther double, lobes grooved; style slender, supported at the base by the usual two subulate processes; stigma a small concave, simple orifice.

OBSERVATIONS.

"The roots of this species had long been introduced into the *Materia Medica,* as a powerful stimulant and tonic in hysteric, paralytic, and other nervous disorders, possessing a warm bitterish flavour, with the smell of ginger; but they have long gone out of use." *Smith in Rees.* "It is a native of Coromandel, Bengal and Bahar; flowering time July and August; seed ripe in November and December." *Roxb. in Fl. Ind.* It is said to have been introduced into the English stoves by Sir Joseph Bankes, in 1796. A plant of it was received at the Botanic Garden at Liverpool, soon after its establishment, when, being unaccompanied by a name, it received the specific appellation of *purpureum,* (v. *Rosc. in Trans. Lin. Soc.* v. viii. p. 348,) by which it has been since cited as a different species from *Cassumunar,* but which must now be excluded from the list of species.

The present drawing was made from a plant in the Liverpool Botanic Garden, which flowered in August, 1823.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Calyx.
4. Intire flower.
5. Germen and processes, style and stigma.
6. Capsule.

Zingiber chrysanthum.

ZINGIBER CHRYSANTHUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extending beyond the anther, in an awl-shaped grooved beak, embracing the style.

SPEC. CHAR.—Spike radical, sessile, ovate, imbricate; outer bractes broad, ovate, the upper ones terminating in an acute, reflexed, twisted, villous point; lip in three segments, middle segment crenate, slightly bifid at the apex, bright yellow; outer limb of corolla red.

DESCRIPTION.

Root tuberous, fleshy, running horizontally, very large; stems erect, numerous, 7–8 feet high; leaves alternate, bifarious, lanceolate, smooth on the upper surface, downy beneath, nearly sessile, on a short twisted petiole, with a blunt stipulated *ocrea;* spike radical, sitting closely on the root, composed of large imbricated bractes, of a pale green colour, broad, ovate, narrowing to the point, apex villous, twisted, reflexed; inner bractes linear, sheathing the tube of the corolla three-fourths of its length, pale green; calyx superior, cylindrical, membranous, pellucid, ciliated; tube incurved, downy; outer limb of the corolla in three lanceolate segments, deep red or scarlet, the middle one concave, incurved, and slightly hairy; inner limb or lip in three lobes, of a beautiful bright yellow or gold colour, the middle one the largest, crenate, and slightly bifid; filament with the beak nearly the length of the lip; anther double, very long; style continued beyond the anther, through the groove of the filament, and supported at the base by two pointed germinal processes; stigma a ciliated cup; germen downy, three-celled.

OBSERVATIONS.

This splendid species of Zingiber, now first named, figured, and described, is a native of Napal, and was sent by Dr. WALLICH, of Calcutta, in 1821, to the Botanic Garden, in Liverpool, where it flowered in July 1822. Its bright golden flowers closely sitting on the ground, make a singular appearance. The fresh roots are slightly aromatic to the taste.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Corolla intire.
4. Outer limb of corolla.
5. Germen, calyx, and inner limb of corolla.
6. Germen and processes, anther, and awl-shaped beak.
7. Style and stigma.

1. 2. 3. 4. 5. 6. 7.

Zingiber roseum.

ZINGIBER ROSEUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, filament extending beyond the anther in an awl-shaped beak, grooved, embracing the style.

SPEC. CHAR.—Spike lateral, radical, half immersed in the earth, ovate, imbricate; bractes broad-lanceolate-acute, crimson towards the apex; outer limb of corolla lanceolate, crimson; lip ovate, crenate, pale yellow.

SYN.—Amomum roseum. *Corom. Pl.* ii. 126.

Zingiber roseum. *Rosc. in Lin. Tran.* viii. 348.

Zingiber roseum. *Roxb. Flor. Ind.* i. 49.

Zingiber roseum. *Smith, in Rees' New Cyclop.*

Zingiber roseum. *Roemer & Schultes*, i. 24.

Zingiber roseum. *Sprengel*, i. 12.

DESCRIPTION.

Root tuberous, jointed, white, solid, with strong fibres; stem erect, from 3 to 4 feet high; leaves alternate, broad-lanceolate, smooth above and villous below; petioles very short, decurrent, sheathing the stem, and terminating above in a long stipule or *ocrea*, with an acute apex; spike radical, rising from the termination of the jointed root; bractes closely imbricated, the lower ones ovate, with an acute apex, the upper ones lanceolate-acute; inner bractes ovate, closely embracing the germen and tube of the corolla, trifid at the apex; calyx superior, tubular, membranaceous, somewhat inflated, bifid, half the length of the tube of the corolla; outer limb of corolla in three segments, lanceolate-acute, the upper one rather the largest, and nearly erect, the two lower ones deflexed, supporting the lip; tube of the corolla nearly two inches long, cylindrical, white; interior limb or lip ovate, slightly emarginate, or crenate, pale yellow, auriculated on each side by a blunt lobe of an orange colour; filament linear, erect, extending beyond the anther in a long subulate process, grooved, and embracing the style; style filiform, supported at the base by two subulate yellow processes, and extending a little beyond the apex of the filament; stigma a ciliated cup.

OBSERVATIONS.

Of this species, which is a native of moist valleys in the interior of Bengal, Dr. Buchanan sent plants to the Botanic Garden at Calcutta, where they blossom in August. Plants of it were received at the Liverpool Garden from Mr. Brockager at Hoogley, and Dr. Carey at Serampore, in 1822. From one of these which flowered in July 1824, the present drawing was taken. It does not appear, according to an observation in *Flor. Ind.* i. 50, that the natives make any use of this plant.

REFERENCES.

1. Lip.
2. Outer bracte.
3. Inner ditto.
4. Filament and anther.
5. Germen, with processes, style and stigma.
6. Calyx.
7. Intire flower.

Zingiber rubens

ZINGIBER RUBENS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extending beyond the anther, in an awl-shaped beak, embracing the style.

SPEC. CHAR.—Spike lateral, radical, half immersed in the earth, imbricate; bractes linear-lanceolate-acute, bright red, slightly villous; lip oblong-ovate, intire, revolute, spotted with red.

Zingiber Rubens, *Flor. Ind.* sp. 6, vol. i. p. 51.

DESCRIPTION.

Roots tuberous; stems herbaceous, declining, 6–8 feet high; leaves alternate, bifarious, sessile, sheathing, lanceolate, 12–14 inches long, smooth on the upper and villous on the under side, terminating in a long membranaceous stipule, somewhat bifid, and hairy at the apex; spikes radical, rising from the base of the stem, where they join the root, oblong-ovate, imbricated; outer bracte one-flowered, lanceolate-acute, bright red, slightly villous; inner bracte nearly the length of the tube of the corolla, pellucid, slightly villous, irregularly tridentate; calyx cylindrical, membranaceous, pellucid, sheathing the tube of the corolla half its length, apex three-toothed, very slightly villous; corolla with a long recurved cylindrical villous tube; exterior limb of the corolla in three lanceolate-acute, concave, bright-red segments, the two lateral ones immediately under, and supporting the lip, and projecting a little beyond it, the other segment erect, all slightly hairy; interior limb or lip of one segment oblong-ovate, mucronate, revolute, beautifully marked with spots of red on a yellowish ground; filament short; anther two-lobed, terminating with the long awl-shaped process or horn, of a bright red colour, extending along the upper side of the lip; style tubular, slender; stigma funnel-shaped, ciliated, with the mouth downwards; germen villous, three-celled; germinal processes blunt.

OBSERVATIONS.

A native of the interior of Bengal, sent by Dr. Buchanan from the neighbourhood of *Rungpore*, to the Botanic Garden at Calcutta. A plant received from Messrs. Loddiges' at Hackney, flowered in the Botanic Garden at Liverpool, in October 1822.

REFERENCES.

1. Outer bracte.
2. Inner ditto.
3. Calyx.
4. Germen, anther, and projecting beak of the filament.
5. Anther, and beak in front.
6. Germen and processes, style and stigma.
7. The lip resting on the two lateral segments of the outer limb of corolla.
8. The lip expanded.

7.
8.
9.
10.
11.
Zingiber squarrosum.

ZINGIBER SQUARROSUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extending beyond the anther in a subulate beak, embracing the style.

SPEC. CHAR.—Spike radical, lateral, scarcely rising above the earth; bractes imbricate, lanceolate, villose, crimson at the apex; outer limb of corolla in three sections, linear, crenate, reflexed, white; lip simple, ovate, crenate, white.

SYN.—Zingiber squarrosum. *Roxb. in Trans. Asiat. Soc.* xi. 348. *Flor. Ind.* i. 52.
Zingiber squarrosum. *Roemer & Schultes,* i. 566.
Zingiber squarrosum. *Sprengel,* i. 12.

DESCRIPTION.

Roots tuberous, with imbricated squarrose sheaths; stem herbaceous, smooth, erect, 4–5 feet high; leaves alternate, lanceolate, distantly nerved, undulate on the margin, smooth on the upper surface and slightly villous beneath; petioles from one inch to an inch and a half long, with a very long, smooth, stipule, or *ocrea,* embracing the stem; spike rising from the root at a distance from the stem, ovate, more than half immersed in the earth; bractes lanceolate, villose, crimson at the apex, 3–4 flowered, imbricate; inner bractes as long as the tube of the corolla, three-cleft, and crimson at the apex; calyx superior, cylindrical, embracing the tube; corolla tubular, with a double limb; outer limb in three sections; sections long, linear, crenate at the margins, recurved in various directions, white; inner limb or lip with a short claw, broad, ovate, crenate, white, erect; filament extending beyond the anther in a slender subulate grooved beak; anther double, linear, grooved, embracing the style; stigma a ciliated cup, projecting beyond the beak; capsule on a short pedicel, large, ovate, striate, externally of a fine peach colour, internally a bright scarlet, opening from the apex in three valves; seeds numerous, globular, black, rugose, with a white tomentose aril, arranged in two rows, and attached by an upright dissepiment to the middle of each valve.

OBSERVATIONS.

Although we have received this plant at three several times from our different correspondents in India, under the name of *Zingiber squarrosum,* we are by no means certain that it is the plant described under the same name by Dr. Roxburgh in the *Flor. Ind.* the corolla being there described as having an exterior border of three pink-coloured, lanceolate-acute segments, and the inner border or lip as two-lobed at the base, the apex bifid, and the colour a speckled mixture of purple, red, and yellow; whilst in our plant, which has flowered with us for several successive years, these parts differ both in form and colour, the corolla being intirely white. Other differences, of no less importance, seem to exist between the plants described; insomuch that we shall not be surprised if the specific name *Squarrosum* should belong to a different species, and the present one should appear not to have been heretofore described. We are, however, fully convinced, that our friends who at present preside, with such acknowledged ability, over the Botanical departments at Serampore and Calcutta, will, on the inspection of our work, be enabled to remove our doubts.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Germen and processes, anther, style and stigma.
4. Calyx, tube, and lip of corolla.
5. Outer limb of corolla.
6. Inner limb or lip.
7, 8. Capsule.
9. The same open.
10. Seed.
11. The same with its aril.

1 2 3 4 5

Zingiber capitatum

ZINGIBER CAPITATUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extending beyond the anther in an awl-shaped, grooved beak, embracing the style.

SPEC. CHAR.—Spike terminal, long, linear, imbricate, fastigiate; leaves linear-lanceolate-acute, sheathing the stem; flowers large, yellow.

Zingiber capitatum. *Flor. Indica*, vol. i. p. 54.

DESCRIPTION.

Root composed of numerous tubers, surrounding, and dependant from, the central bulb, of a watery consistence and insipid taste; stems erect, round, enveloped in the sheaths of the leaves, three feet high; leaves alternate, linear-lanceolate, smooth, and bright green on the upper surface, villous and glaucous below; spike terminal, sessile, linear-oblong, closely imbricated, fastigiate; outer bractes inferior, linear-lanceolate-acute, somewhat concave, green, margin membranous, slightly tinged with rose colour at the apex, smooth; inner bracte membranous, sheathing the tube of the corolla, greenish, pellucid, slightly villous at the apex; calyx superior, inflated, sub-trifid, slightly hairy, sheathing the tube of the corolla half its length; corolla tubular; outer limb in three segments, one erect, the others equal, linear, extending below and supporting the lip; inner limb in three lobes, the two lateral ones equal, oblong-ovate, expanding; the central lobe or lip broad-ovate, slightly emarginate; the whole corolla a bright yellow; filament extending beyond the anther in a grooved beak; anther double; style filiform, rising from the germen between two long slender processes, following the course of the filament, and terminating a little beyond the beak, in a cup-shaped stigma, germen ovate, villous; mature spike conical, imbricate, red; capsules oval, three-celled; seeds numerous, black, imbedded in a white aril.

OBSERVATIONS.

The present figure is given from a drawing by a native artist, brought into this country by the Right Hon. the Earl of Mountnorris, and by his permission engraved for the present work. The living plant is also in the Botanic Garden at Liverpool, having been sent from the banks of the Hoogly, in Bengal, by Mr. Brocager, in the year 1822, and flowered there the 9th August 1823; but on comparing the specimen with the present drawing, it appeared that the representation could not be improved, and the dissections of the flower only were added. We are informed, in *Flor. Ind.* that "this plant is a native of the forests of Rohilcund, and that from thence Colonel Thomas Hardwicke sent plants to the Botanic Garden (at Calcutta) under the vernacular name *Junglee Adruk*; that it flowers there during the rains, and the seeds ripen in September and October." *Rox. Flor. Ind.* vol. i. p. 55.

REFERENCES.

1. Outer bracte.
2. Inner bracte.
3. Intire flower.
4. Germen and calyx.
5. Anther and awl-shaped beak.
6. Germen and processes, style and stigma.

Zingiber clatum

ZINGIBER ELATUM.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extending beyond the anther, in a subulate grooved beak, embracing the style.

SPEC. CHAR.—Spike terminal, bractes lanceolate, diverging, one-flowered; lip broad, ovate, deeply notched at the apex; beak very long; flowers bright yellow.

SYN.—Zingiber elatum. *Roxb. Flor. Ind.* v. i. p. 56.

DESCRIPTION.

Roots with numerous small tubers; stems herbaceous, from 4 to 5 feet high, sheathed by the decurrent petioles; leaves bifarious, alternate, linear-lanceolate, recurved; spikes terminal, of a narrow, lanceolate, compact form, composed of a series of erect, lanceolate, divaricate, pointed bractes, each containing a single flower; calyx superior, toothed; corolla with a double limb, outer limb in three sections, the upper one larger, concave, the lower ones long, linear, declined, equal; lower lip expanding in three sections, the middle section deeply notched at the apex, the whole flower of a bright yellow; filament supporting the anther, and extending beyond it in a long subulate beak; anther two-lobed; style simple, extending beyond the beak of the filament, supported at the base by the germinal processes, and crowned by the ciliated stigma; capsule size of a small olive, three-celled, three-valved.

OBSERVATIONS.

That the present terminal species of *Zingiber* is the *Z. elatum* of the *Flora Indica* (vol. i. p. 56.) we cannot entertain a doubt, after having attentively compared our figure with the very minute description there given. The drawing was brought, with many others, some years since, from the neighbourhood of Lucknow, by the Right Hon. the Earl of Mountnorris, and is here figured by his Lordship's permission. We have long been of opinion that no generic distinction can be founded on the radical or terminal appearance of the spike; and we have some reason to doubt whether it affords even a good specific difference; as we may perhaps state more at large, if an opportunity occurs.

The *Z. elatum* is a native of Bengal, flowering in the Botanic Garden at Calcutta in July and August, and ripening its seeds in September and October. It does not appear to have been yet introduced into Europe.

Kæmpferia galanga.

KÆMPFERIA GALANGA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extended beyond the anther; apex bilobate.

SPEC. CHAR.—Spike central; leaves radical, bifarious, spreading on the ground, broad-ovate, downy beneath; lower lip deeply divided into two ovate lobes, with a purple mark at the base of each lobe, the remainder pure white; filament short, crest bipartite, recurved.

SYN.—Katsjula Kelengu. *Rheed. Mal.* xi. *tab.* 41.

Soncorus. *Rumph. Amb.* v. *tab.* 69. *fig.* 2.

Alpinia sessilis. *Koenig. in Retz. obs.* 3. p. 62.

Kæmpferia galanga, *foliis ovatis sessilibus. Hort. Kew. Ed.* i. p. 3.

Kæmpferia galanga. *Willd.* i. 15. *Enumer.* i. 5.

Kæmpferia galanga. *Smith, in Rees' Cyclop. in loco.*

Kæmpferia galanga. *Bot. Mag. t.* 850.

Kæmpferia galanga. *Roxb. in Asiat. Res.* xi. 327. *Flor. Ind.* i. 14.

Kæmpferia galanga. *Roemer & Schultes, Syst. Veg.* i. p. 27.

Kampferia galanga. *Sprengel, Syst. Veg.* i. p. 10.

DESCRIPTION.

Roots perennial, consisting of numerous ovate tubers, with appendant fibres; stem sheathing, not rising above the ground; leaves bifarious, spreading, 4–6 inches long, and nearly as broad, strongly ribbed, green and smooth above, glaucous and downy below; spike central; flowers in small fascicles of 8–10, rising in succession; common bracte or sheath lanceolate, acute; partial bractes to each flower narrow, white; calyx sheathing the tube of the corolla half its length, white; corolla tubular, with a double border; outer limb of three equal, linear-lanceolate, concave segments, white; inner limb of three segments, the two upper segments erect, ovate, spreading, pure white; lower segment or lip deeply divided into two ovate lobes, with a dark purple mark at the base of each lobe, the remainder white; filament short, extended a little beyond the anther; apex in two blunt, recurved lobes; anther double, crowned with the crest of the filament; style tubular, slender, supported at the base by two narrow, subulate processes; stigma cup-shaped.

OBSERVATIONS.

This plant has long been cultivated in the East as a medicine, a condiment, and a perfume. It was introduced into this country as early as 1724, by Charles Dubois, Esq. but is not of very frequent occurrence in our stoves; the flowers, although very elegant, being of short duration, succeeding each other daily till the whole fascicle is exhausted. The roots seem to possess the same warm, aromatic qualities that are common to the genus; but Sir Joseph Banks found, on inquiry, that they were unknown to the druggists in London. The plant was found by Kæmpfer, in Japan, but only in a cultivated state. *Smith, in Rees' Cyclop.* Dr. Carey informs us, that it is said to be very common on the mountainous districts beyond *Chittagong*, where it is called *Kumula*, and that it is cultivated by the *Joomma* (mountain) *Mugs*, and by them brought down and sold in the markets to the people of *Bengal*, under the above name, who use it as an ingredient in their betel. *As. Res.* xi. 327. *Flor. Ind.* i. 14.

REFERENCES.

1. Outer limb of corolla, filament and anther.
2. Upper sections of inner limb of corolla.
3. Lower section or lip.
4. Germen, subulate processes, style and stigma.
5. Floral bracte.

Kämpferia marginata

KÆMPFERIA MARGINATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extended beyond the anther; apex two-lobed.

SPEC. CHAR.—Spike central; leaves broad-ovate, margin coloured, glaucous and downy below; filament two-lobed, lobes obtuse, emarginate; inner limb of the corolla, lateral segments cordate, lip broad-ovate, two-lobed, lobes bifid, emarginate.

SYN.—Kæmpferia marginata, *Carey, MS.*

DESCRIPTION.

Root composed of numerous round or oblong fleshy tubers, with dependant fibres; *stems* short; *leaves* radical, bifarious, seldom more than two from the same crown, spreading flat on the surface of the earth, light green on the upper surface, glaucous and villous below, surrounded by a membranous purple margin, and tinged with the same colour towards the apex below, 6 inches long, 5 broad, with longitudinal nerves about half an inch distant; *flowers* in fascicles of 6–8, rising in succession from the centre of the plant; *common* bracte broad-lanceolate, green, acute, and coloured at the point; *partial bracte* narrow-lanceolate, membranous; *calyx* superior, sheathing the tube of the corolla half its length, opening obliquely, white; *tube* of the corolla upwards of an inch long, terminating in a double border; *exterior border* in three sections, long, lanceolate, equal, reflexed, pure white; *interior border* in three segments; *lateral segments* heart-shaped, erect, purple, on a short white claw; *middle segment* or *lip* in two deep lobes, each lobe broad-ovate, bifid, or emarginate, bright purple, with a darker shade at the base; *filament* extending beyond the anther, and terminating in a two-lobed apex or crest, each lobe slightly bifid, or truncate, purple; *style* filiform, with two long, erect processes at the base; *stigma* funnel-shaped, finely ciliated round the margin.

OBSERVATIONS.

This new and beautiful species of Kæmpferia, was sent from India to the Botanic Garden, in Liverpool, by Dr. WILLIAM CAREY, in 1822, and flowered soon after its arrival. The medical properties of its strongly-scented tuberous roots, are yet unknown.

REFERENCES.

1. Tube and outer limb of the corolla, filament, and anther.
2. }
3. } Segments of inner border of the corolla.
4. }
5. Style and processes at the base, and stigma.
6. Common bracte.

Kæmpferia angustifolia

KÆMPFERIA ANGUSTIFOLIA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extended beyond the anther, apex lobed.

SPEC. CHAR.—Spike central; leaves radical, narrow-lanceolate, waved, smooth on both sides, paler beneath; filament bifid at the apex; lip bilobate, lobes ovate, purple.

SYN.—Kæmpferia angustifolia. *Smith in Rees' Cyclop. in loco.*

Kæmpferia angustifolia. *Hort. Kew. Ed. alt.* vol. i. p. 8.

Kæmpferia angustifolia. *Willd. Enumeratio,* vol. i. p. 5.

Kæmpferia angustifolia. *Roxb. Flor. Ind.* i. 16.

Kæmpferia angustifolia. *Redouté, Pl. Liliac. tab.* 389. *Roemer & Schultes,* i. 27.

Kæmpfera angustifolia. *Sprengel,* i. 10.

DESCRIPTION.

Root consisting of numerous ovate tubers, with many fibres, biennial; leaves radical, lanceolate, undulate, intire, 4–6 inches long, 1½ broad, longitudinally nerved, smooth on both sides, paler beneath, decurrent, and keeled at the base; spike rising in the centre of the leaves, from a lanceolate bracte, that incloses the whole fascicle, an inner bracte accompanying each flower; calyx superior, of one leaf, sheathing the tube of the corolla nearly half its length, and opening obliquely on one side; corolla tubular, with a double border; outer limb of three long, narrow, linear-lanceolate segments, pure white; inner limb of three segments, two of which are equal, erect, ovate, intire, white; the lower segment or lip larger than the others, bilobate, of a deep purple or violet colour, with a white claw; filament extending beyond the anther, and terminating in a bifid crest; anther in two lobes, embracing the style; style filiform, supported at the base by two subulate processes about a quarter of an inch long; stigma funnel-shaped, margin simple.

OBSERVATIONS.

This small but elegant species of *Kæmpferia,* (or as Profes. Sprengel has of late denominated it, KÆMPFERA,) is a native of Bengal, flowering during the rainy season, and was introduced into the Royal Garden at Kew by Sir Joseph Banks, in 1797. It generally flowers in this climate early in the spring. The root, which like those of the other species, is strongly aromatic, is used by the natives of the East as a remedy for a cough, for which purpose a small part of it is mixed up with their *betle. (Roxb. in As. Res.* xi. 328.)

REFERENCES.

1. The two segments of the upper lip of interior limb of corolla.
2. Lower lip of corolla.
3. The three segments of exterior limb of corolla, filament and anther.
4. Calyx.
5. Style, with its subulate processes and stigma.

Kæmpferia ovalifolia.

KÆMPFERIA OVALIFOLIA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extended beyond the anther; apex lobed.

SPEC. CHAR.—Spike radical; leaves ovate-lanceolate, intirely green; filament three-lobed, middle lobe notched; lip purple, bilobate; lobes mucronate.

DESCRIPTION.

Root consisting of large, ovate, fleshy tubers, with numerous fibres; lower leaves ovate; upper leaves lanceolate, with long sheathing petioles which are purpurescent at the base; spike radical, rising before the leaves; scape about four inches long, containing several flowers, which expand in succession; calyx superior, about half the length of the corolla, white; tube of the corolla long, linear, erect, terminating with a double border; exterior border in three segments, long, narrow, equal, lanceolate, erect, white; interior border in three segments, the two upper segments oblong, ovate, equal, intire, pure white; the lower segment or lip purple, deeply divided into two lobes, each lobe obcordate, bifid, with a short mucronate process in the centre; claw yellow, with oblique purple streaks; filament erect, extended beyond the anther, terminating in three lobes, the middle lobe slightly notched, the others acute, intire; style long, slender, closely embraced at the base by two erect, subulate processes; stigma concave, ciliated; germen three-celled; seeds numerous.

OBSERVATIONS.

This plant has been sent to the Botanic Garden in Liverpool, at three different times, from the East Indies, as *K. ovalifolia;* yet it is not without considerable hesitation that we have been induced to publish it under that name; as it differs in so many striking particulars from the *K. ovalifolia* given in Dr. Roxburgh's Coromandel Plants, and described in *Flor. Ind.* vol. i. p. 8. that we might have been fully justified in considering it as a different species. In that plant the spike appears to be central, rising with the leaves; whilst in ours it is lateral, and precedes the leaves. In the figure in Coromandel Plants, the leaves agree with the appellation, being oval, without petioles, bifarious, and spreading near the surface of the ground; in ours the lower leaves *only* are ovate, the upper ones being lanceolate, on long petioles, and the whole plant appearing to be of a different habit. When, however, we examine the corolla, we find such an exact concordance in its structure, and this structure is so different from that of any others known to us of this genus, that we have thought it advisable to retain the name under which we received the plant. The peculiarity we refer to, consists in the termination or crest of the filament, which in all the other species of *Kæmpferia* which we have examined, is bifid, but in this plant is trifid, the middle lobe being also slightly indented or notched. It may indeed be said, that from the very recent importation of many of the Scitaminean plants into this country, we are but very imperfectly acquainted with their habits, and the variations of their growth; so that after all, it is not impossible that the diversities we have pointed out, between Dr. Roxburgh's figure and our own, may not be specifically essential, or at most, may serve only to characterise these plants as varieties.

REFERENCES.

1. Intire flower.
2. Bifid lip, and mucronate processes.
3. Upper segments of the interior limb of corolla.
4. Exterior limb of corolla.
5. Filament, anther, and crest.
6. Germen, style, with its supporting processes, and stigma.

Kæmpferia pandurata.

KÆMPFERIA PANDURATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extended beyond the anther, apex lobed.

SPEC. CHAR.—Spike central; leaves radical, broad-lanceolate, smooth, with long grooved petioles; filament bilobate; lip broad, panduriform, trilobate.

SYN.—Manja-kua, *Rheede, Hort. Mal.* v. xi. *tab.* 10.
Zerumbet claviculatum, *Rumph, Amb.* v. *tab.* 69.
Curcuma rotunda, *Lin. Sp. Pl.* 1. 3. *Willd. Sp. Pl.* 1. 14.
Kæmpferia ovata, *Rosc. in Lin. Trans.* v. viii. p. 351. v. xi. 274.
Kæmpferia Pandurata, *Roxb. in As. Res.* v. xi. 328.
Kæmpferia Pandurata, *Bot. Reg.* vol. ii. No. 173.
Kæmpferia Pandurata, *Loddiges' Bot. Cab.* No. 587.

DESCRIPTION.

Roots perennial, tuberous, fusiform, deep orange within; stem short, composed of the sheathing petioles of the leaves, about two feet high, purple towards the base; leaves broad-lanceolate, smooth on both sides; petioles nearly as long as the leaves, deeply channelled; spike rising in the centre of the leaves from a common imbricated sheath, composed of a double series of bractes, the outer ones long, lanceolate, pale green; the inner ones narrower, lanceolate, pink colour, and containing a congeries of flowers rising in succession by one or two at a time; calyx superior, membranaceous, lobed at the apex, inflated, pale rose-colour, sheathing the tube of the corolla one-fourth its length; tube of the corolla very long, smooth, faux hairy; outer limb of the corolla in three lanceolate segments, the upper one rather the largest, pale pink; inner limb in three segments, the two lateral ones ovate, equal, rose-colour, the lower or lip much larger, broad, panduriform, or rather trilobate, with the middle lobe slightly notched, striated in the centre, and deep purple round the margin; filament extending beyond the anther in an oblong process, terminating in two short blunt lobes; anther two-lobed, oblong, crossed in front by an horizontal helmet-shaped process; style slender, with two glandular processes at the base, very long and subulate; stigma concave, lobed, and slightly ciliated at the margin; germen ovate, smooth, three-celled; seeds numerous.

OBSERVATIONS.

One of the first results of the new arrangement of the *Scitamineæ*, was the reference of this singular plant, which had not before been ascertained, to its proper genus. Our first knowledge of it is from the *Hortus Malabaricus* of Van Rheede, *vol. xi. tab.* 10, where it is given under its Indian name of *Manja-kua*, and to this Linnæus referred for his *Curcuma rotunda.* Convinced, however, of its being a Kæmpferia, I enumerated it amongst its congeners, in my arrangement of Monandrian Plants, (*Trans. Lin. Soc.* vol. viii.) under the name of *K. ovata*, since which a very good figure has been published by Dr. Roxburgh, (*in Asiat. Res.* vol. xi. p. 328,) under the name of *K. pandurata*, which he rightly conjectures to be the same (notwithstanding some slight variations in the description) as my *ovata*, a name which, in deference to him, and to prevent mistakes, I have, in a paper in *Lin. Trans.* (vol. xi. p. 274,) already withdrawn.

This plant is a native of *Sumatra*, but has been in this country many years. Its long fusiform roots are probably, like most of the tribe, possessed of medicinal properties, although it does not appear they have been tried.

REFERENCES.

1. Germen and scape, from which the flowers rise in succession.
2. Outer and inner bractes.
3. Lateral sections of inner limb of corolla.
4. Lip.
5. Germen, tube, and outer limb of corolla.
6. Filament, with its bifid apex, anther and stigma, (magnified.)
7. Germen, with its glandular processes, style and stigma.
8. Calyx.

Hampeficia rotunda.

KÆMPFERIA ROTUNDA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double; filament extended beyond the anther; apex bilobate.

SPEC. CHAR.—Spike radical; leaves broad-lanceolate, waved, a ferruginous purple beneath; lower lip of the interior limb of the corolla bilobate; lobes ovate, obtuse.

SYN.—Malan-kua. Hort. Mal. tom. xi. tab. 9.

Bhúchampaca, Sir Wm. Jones's Works, vol. v. p. 70.

Kæmpferia longa. Jacq. Hort. Schonb. vol. iii. tab. 317.

Kæmpferia longa. Redouté, Pl. Lil. tab. 49.

Kæmpferia rotunda. Curt. Bot. Mag. 920.

Kæmpferia rotunda. Flor. Ind. vol. i. p. 15.

DESCRIPTION.

Root consisting of many large, ovate, irregular tubers, with fibrous shoots; leaves radical, long-petioled, broad-lanceolate, smooth on the upper surface, with the exception of about two inches at the base, and striated with shades of green, villous, and purple below; petioles sheathing, purple, forming a short stem; spike radical, rising before the leaves, just above the surface of the earth, sessile, from six to eight flowers in each scape, opening in succession; floral bractes two to each flower; calyx superior, sheathing the tube of the corolla three-fourths its length; apex two small sections or hornlets slightly hairy, with brown spots; tube of the corolla long, linear, erect, with a double border; exterior border in three segments, equal, long, linear, white; interior three segments, unequal, the two upper broad-lanceolate, erect, acute, white, the margins slightly striated with purple; lower segment, or lip, in two broad-lanceolate deflected purple lobes, pointed at the apex; filament short, erect, extending beyond the anther, terminating in two acute sections, pure white; style filiform, supported at the base by two slender germinal processes, nearly half an inch in length; stigma concave, ciliated; germen ovate, three-celled, many-seeded.

OBSERVATIONS.

" This elegant plant is very generally found cultivated in gardens, on account of the beauty and fragrance of its flowers, and though no doubt a native of various parts of India, yet I cannot say where it is indigenous. Flowering time in our gardens, March and April, at which time the plant is totally destitute of leaves."—*Roxburgh, Flor. Ind.* 1, 15.

Sir William Jones, in his earnest desire to restore to the plants of India their native appellations, has given to this plant the name of *Bhúchampaca*, and has celebrated it for the elegance and spicy odour of its flowers.—*Sir Wm. Jones's Works*, vol. v. p. 70. *8vo. ed.* Asiat. Res. vol. iv. p. 242. It has long been cultivated in Europe, and frequently described.

The roots are warmly aromatic, and probably possess qualities similar to those of the Zedoary, for which there is reason to believe they are frequently substituted.

The present drawing was made from a plant that flowered in the Liverpool Botanic Garden, April 17, 1823.

REFERENCES.

1. Segments of the exterior border of the corolla, filament, and anther.
2. Lower lip.
3, 4. Sections of the upper lip of the interior limb.
5. Bracte.
6. Germen, style and stigma, with the long germinal processes.
7. Filament and anther separate.

Amomum Melegueta

AMOMUM MELEGUETA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, attached to the front of a strong erect filament; filament extending beyond the anther, terminating in three lobes; lip unilabiate; seeds many, arilled.

SPEC. CHAR.—Leaves narrow-lanceolate, sub-sessile, alternate, strongly nerved; lip large, ovate, crenate, white, terminating with crimson, pale yellow at the base; germinal processes near an inch long; capsule six inches long, coriaceous, yellow.

DESCRIPTION.

Stem erect, six feet in height; leaves bifarious, sub-sessile, narrow-lanceolate; scape radical, covered at the base with about 7 imbricated, ovate, concave, pointed, and somewhat cuspidate bractes; calyx cylindrical, of one leaf, green, spotted with red; flowers cylindrical, expanding in a double border; outer border in three sections, the middle section largest, ovate, the two others linear and opposite; inner lip very large, broad-ovate, crenate, pale yellow at the base, and crimson at the margin; filament strong, erect, clavate, terminating in three lobes, middle lobe erect and bifid, the other two pointed and recurved; a pair of hornlets on the filament, near the base of the lip; anther in two lobes, seated in front of the filament, a little below the apex, bright yellow; style erect, tubular, expanding into a ciliated stigma or cup, supported at the base by two linear processes, about an inch in length, and one-eighth of an inch in breadth, by much the largest specimen of this part observable in any Scitaminean Plant; fruit a cylindrical coriaceous capsule, six inches in length, yellow spotted with orange, supported at the base by the large ovate concave cuspidate bractes, and containing a columella or receptacle about four inches long, covered with seeds beautifully arranged, arilled, and imbedded in a tomentose substance; seeds angular, bright brown, with a highly aromatic and grateful flavour.

OBSERVATIONS.

Although we cannot but regret that we have not had it in our power to exhibit more than one specimen of the genus *Amomum*, we have had the good fortune to ascertain, and for the first time to figure, the plant which produces the article formerly so extensively known in commerce by the name of *Melegueta Pepper*. On diligently comparing our plant with the various Eastern species of Amomum, so admirably delineated in the *Plants of the Coast of Coromandel*, with the *African* ones discovered by Afzelius, and particularly with the full and excellent description of the various species of Amomum by Sir J. E. Smith, in *Rees's New Cyclopædia*, the most complete that has hitherto appeared, we are strongly of opinion that the present plant differs from all that have hitherto been described, and that from the great size and beauty of its flowers, the conformation of its fruit, and above all, the extraordinary magnitude of its germinal processes, unparalleled, as far as we have observed, in any other Scitaminean Plant, it is to be considered as a distinct species; to which, from the place on the coast of Africa, whence it is supposed to have been originally brought, and as producing the article known under the name of Melegueta Pepper, we have given the specific appellation of *Melegueta*.

Afzelius, we are informed, considered himself as having made a great discovery in determining the *Grana Paradisi* to be the true *Melegueta Pepper;* but after comparing our very perfect specimens of both flowers and fruit, with the figures and descriptions of preceding authors, and particularly with those of *Gærtner* and

of the *Cyclopædia*, we find diversities between our plant and the *Grana Paradisi*, which it appears to us impossible to reconcile; although we shall still be anxious to obtain any information that may throw further light upon the subject.

Some years since, these seeds formed an important article of commerce, and were imported in considerable quantities from the coast of Africa, and sold to dealers in London, Bristol and Liverpool. They were used by brewers for mixing with porter and ale, by distillers and rectifiers for making compounds, and by druggists for medicinal purposes instead of cardamoms. I have been assured by a friend, that fifteen years since, he has seen 20 or 30 tons sold to a single dealer, at from £4 to £5 per cwt. duty paid, and that five or six tons were usually imported in a ship from Guinea; but some idea having arisen that they were of a deleterious quality, the duty was, in 1825, raised two shillings per lb, amounting nearly to a prohibition; since which time, the consumption has been very small. In the fourth *Report of the African Institution*, p. 16, the Directors observe, "that the duties on this article have been doubled, not with a view of increasing the revenue, but as operating as a prohibition of the use of it." The Directors also state in the same report, "that they have great reason to doubt the existence of the deleterious qualities ascribed to this drug, as they find it to be universally esteemed in Africa as one of the most wholesome of spices, and generally used by the natives to season their food." In the above observations we fully concur, being convinced that not a single deleterious plant is to be found in the whole Scitaminean tribe.

That the plant we have here figured, although brought from Demerara, is a native of Africa, whence it has been brought to the tropical climates of America, we entertain little doubt; and that the diversities we have observed may be the effect of a different country, and different cultivation, we are not prepared positively to deny. That our plant produces the seeds called *Melegueta Pepper* we have ascertained by comparing them with those imported under that name from Africa, and sold in the shops of the druggists in Liverpool; and we have therefore given to our plant the specific name of *Melegueta*, from the absolute certainty of this being the plant by which that article is produced.

The specimens from which our drawing was taken were sent by Mr. C. S. Parker from Demerara, where it is extensively cultivated, and where the seeds are much used by the inhabitants as a valuable ingredient in their diet. The specimens sent by Mr. Parker were both dried, and in spirits, in the latter of which the flowers were preserved in the highest perfection; a fine capsule was also enclosed in a bottle closely sealed, without any liquid, the seeds of which were on their arrival sown in the Botanic Garden at Liverpool, and have produced numerous plants now in a healthy and growing state.

REFERENCES.

1. Entire flower and floral bractes.
2. Exterior limb of corolla.
3. Filament, anther, style and stigma.
4. Filament seen at the back.
5 & 6. The same parts separate, shewing also the germinal processes.
7. Interior limb of corolla or lip.
8. Germen.
9. Calyx.
10. Capsule and permanent bractes.
11. Interior seed vessel.
12. Seeds.

Curcuma amada

CURCUMA AMADA.

MONANDRIA MONOGYNIA.

SECT. I. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, the central segment bearing the anther; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike central; plant entirely green; leaves long-petioled, broad-lanceolate-obtuse; exterior limb of the corolla pale yellow, or straw-colour; lip obscurely three-lobed, yellow; coma rose-colour.

SYN.—Amada of the Bengalies. Flor. Ind. 1. *33.*

Tommon-manga. Rumph. Amb. 5. 169. *ap. Asiat. Res.* xi. 341.

DESCRIPTION.

Radical bulb a conical tuber supporting the stem, which is formed by the sheaths of the leaves; palmate tubers at the base, thick, fleshy, fingered, inwardly pale yellow; pendulous tubers suspended by long fibres, penetrating deep into the ground, and consisting of a fine, farinaceous substance, like arrow-root, of a pale colour and slightly aromatic; leaves radical, sheathing, and forming a plant from five to six feet high, broad-lanceolate-ovate, costate, smooth on both sides, from twelve to eighteen inches long, 4-5 broad; sheathing and petioles very long. Scape rising from the centre of the leaves, consisting of a succession of strong, imbricated, pale-green, or straw-coloured fertile bractes, terminating with a coma or tuft of pale purple, or rose-coloured barren bractes, or leaves; fertile bractes, each containing four or five flowers, expanding in succession; calyx superior, unequally three-toothed; exterior limb of the corolla in three sections, white or pale yellow; middle section hooded; interior limb pale yellow; lip obscurely lobed, with a deeper yellow line running down the middle; filament expanded into three petal-like lobes; central lobe bearing the anther, which is spurred at the base and embraces the style, whose compressed cup-like stigma extends a little beyond it; style slender, supported by the germinal processes; germen downy, three-celled.

OBSERVATIONS.

Highly interesting, as being one of the few species of Curcuma which flower from the centre of the leaves, the greater number flowering in a detached scape immediately from the root. The term *Amada* is said by Dr. Roxburgh to mean *Mango-ginger*, the fresh root possessing the peculiar smell of a green-mango. It is a native of Bengal, where the root is used medicinally, and eaten by the natives in their curries. *Roxb. Asiat. Res.* xi. p. 341.

Sent by Dr. Carey from Serampore to the Botanic Garden in Liverpool, where it flowered, probably for the first time in Europe, on the 29th July, 1822.

REFERENCES.

1. Outer bracte.
2. Inner ditto.
3. Corolla intire.
4. Ditto without the lip.
5. Lip of the corolla.
6. Anther and spurs.
7. Germen, with its two processes, style, and stigma.

Curcuma petiolata

100

CURCUMA PETIOLATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament in three sections, the central section bearing the anther; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike central; plant intirely green; leaves long-petioled, broad-ovate, cordate at the base, acute at the apex; corolla intirely yellow; lip two-lobed; coma deep purple.

SYN.—Curcuma petiolata. *Roxb. Flor. Ind.* i. 36.

DESCRIPTION.

Bulbs and palmate tubers few and small, inwardly pale yellow; pendulous tubers on short fusiform fibres; leaves broad-ovate, on very long grooved petioles, slightly cordate at the base, but tapering to an acute point at the extremity, smooth on both sides, strongly nerved, surrounding the spike, and rising to the height of five or six feet; scape rising from the centre of the leaves, simple, erect, bearing a foliaceous spike, consisting of numerous large, concave, imbricated bractes, terminating in a deep purple or lilac-coloured coma; the lower or fertile bractes each containing from three to five flowers; calyx superior, three-toothed; corolla tubular, inflated; exterior limb in three sections, ovate, erect; interior limb bilabiate; upper lip in three petal-like lobes, the central lobe bearing the anther, the lateral ones converging, and protecting it; lower lip small, ovate, diminishing towards the apex, where it is slightly bifid; the whole corolla a uniform yellow; anther bilobate, bicalcarate at the base; style slender, supported by the two usual germinal processes; stigma a ciliated cup; germen ovate, three-celled.

OBSERVATIONS.

This very elegant central flowering species of Curcuma is of recent acquisition, having been discovered in Pegu, and sent from thence by Mr. F. Carey, to the Botanic Garden at Calcutta. It was soon afterwards transmitted by the kindness of Dr. Wallich, to Liverpool, where it continues to produce, annually, its fine flowers, affording, with its large deep-green leaves, a principal ornament of the collection.

REFERENCES.

1. Intire flower.
2. Exterior limb of corolla.
3. Upper lip of interior limb, or filament and anther.
4. The anther, with its bicalcarate appendage, magnified.
5. Germen and processes, style and stigma.
6. Lower lip.

Curcuma amarissima.

CURCUMA AMARISSIMA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, middle segment bearing the anther.

SPEC. CHAR.—Spike lateral; stem clouded; leaves broad-ovate, dark green; exterior limb of corolla crimson; lip ovate, yellow; coma white, tipt with pink; root and palmate tubers very large, yellow in the centre, and æruginous towards the margin.

DESCRIPTION.

Floral bulb composed of a series of large jointed tubers, with lateral fibres, palmate tubers long, linear, the thickness of a man's thumb, æruginous and yellow within; pendulous tubers few and small, of a pearly hue within; stem rufescent; leaves green and smooth on both sides, with sheathing petioles; spike lateral, from 4–6 inches high, with brown, purplish sheaths; fertile bractes large, imbricate, dark green; coma small, white, tipt at the apex of the bractes with pale pink colour; interior bracte ovate, white; calyx in three sections, tipt with pink at the apex; outer limb of corolla in three segments, crimson; upper segment mucronate, hooded; filament, or upper lip of the interior limb in three sections, pale straw colour, the lateral sections erect, converging, the middle one bearing the bicalcarate grooved anther; lower lip obtusely trilobate, yellow, the middle lobe largest, crenate or undulate at the margin; style filiform, with two subulate processes at the base; stigma a ciliated cup; germen villous; capsule three-celled; seeds numerous.

OBSERVATIONS.

This plant, which, as far as my inquiries have extended, has not hitherto been either figured or described, is readily known from every other species, by its dusky rufescent stem, its white and scanty coma, and its intensely bitter root, which has induced me to distinguish it by its present appellation.—It was sent by the Rev. Dr. Carey, of Serampore, to the Botanic Garden in Liverpool, where it flowered in the month of April 1824.

REFERENCES.

1. Section of one of the pendulous tubers.
2. Calyx.
3. Interior bracte.
4. Lip.
5. Intire flower.
6. Upper lip of interior limb of corolla, antheriferous.
7. Ditto, reversed.
8. Germen, with its subulate processes, style and stigma.
9. Anther and style.

Curcuma leucorhiza.

CURCUMA LEUCORRHIZA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament in three sections, the central section antheriferous; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike lateral; plant intirely green; leaves broad-lanceolate, smooth on both sides; spikes few-flowered; coma pale rose colour; outer limb of the corolla slightly tinged with purple; inner limb yellow.

SYN.—Curcuma leucorrhiza. *Roxb. Flor. Ind.* i. 30.

DESCRIPTION.

Floral bulb ovate; palmate tubers long and straight, very pale yellow or white within; pendulous tubers numerous, far-spreading, of a pearly whiteness within; leaves broad-lanceolate, petiolate, smooth, uniformly green; plant from 3 to 4 feet high; spike lateral, from 6 to 8 inches high; fertile bractes green, concave, imbricate, terminating above in a pale rosy coma, each bracte containing four flowers rising in succession; calyx superior, three-toothed; corolla tubular, slender, exterior limb in three sections, ovate, the central one slightly mucronate, and hooded over the anther, the lateral ones acuminate, recurved, white, slightly tinged with purple; interior limb bilabiate; upper lip in three petal-like lobes, yellow, the middle one bearing the anther, the two lateral ones converging towards and protecting it; lower lip ovate, white, with a purplish tinge, bifid and yellow at the apex; anther bicalcarate at the base, embracing the style; style supported at the base by the two usual germinal processes; stigma a ciliated, compressed cup; germen ovate.

OBSERVATIONS.

A native of the forests of Bahar. This plant, like several other of the species, is known by the name of *Tikhur*, or *Tikor*, under which name the roots were first sent to Calcutta from Bhagulpore, by Mr. John Glass, the Surgeon on that station, who observes, that "the plant is not cultivated, but grows in the jungles to the southward of that place." The process, he says, for obtaining the starchy substance called Tikor, is as follows: "The root is dug up and rubbed on a stone, or beat in a mortar, and afterwards rubbed in water with the hand, and strained through a cloth; the fecula having subsided, the water is poured off, and the *Tikor* (fecula) dried for use."—*Flor. Ind.* i. 30. Whole districts of the people in some parts of the East, are said to subsist chiefly on this nutritious and spontaneous food, which might, however, be readily cultivated to any extent required.

REFERENCES.

1. Upper lip of the corolla, showing the filament and anther, with its spurs, style and stigma.
2. Lower lip.
3. Intire flower, showing the exterior and interior limb.

Curcuma aromatica.

CURCUMA AROMATICA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, the central segment bearing the anther; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike lateral; plant intirely green; leaves downy, or sericeous underneath, subsessile, inæquilateral; outer limb of the corolla white, slightly tinged with rose-colour; inner limb yellow; coma rose-colour.

SYN.—*C. Zedoaria.* Roxburgh, in Asiat. Res. vol. xi. p. *333.* Flor. Ind. vol. i. p. *23.*

C. Aromatica. Salisbury, Paradisus Londinensis, vol. ii. par. 1, fig. 96.

C. Aromatica. Curt. Bot. Mag. 1546.

DESCRIPTION.

Root as usual in the genus, in three parts, viz. 1. Bulb producing the stem and leaves. 2. The thick, fleshy, fingered tubers surrounding the bulb, yellowish within, and containing a strong aromatic or medicinal quality. And, 3. The fibres or roots penetrating deeper into the ground, and generally terminating in large ovate or pear-shaped tubers, of a paler colour within, very slightly aromatic, and producing a fine farinaceous substance resembling arrow-root; stem rising from the central bulb, uniformly green; plant 3–4 feet high; leaves broad-lanceolate, intire, intirely green, sericeous or downy on the under side, 1–2 feet long, 4–6 inches broad; petioles short, sheathing the stem; inflorescence radical, rising before, or at a distance from the leaves, consisting of a tufted spike, formed by a series of imbricated concave green bractes, the lower portion fertile, and each containing three or four flowers, expanding in succession; the upper bractes sterile, foliaceous, spreading in a loose coma, of a light rose colour; calyx superior, membranous, irregularly three-toothed; corolla with a double border or limb; exterior limb in three segments of a pale pink colour, the two lateral ones equal, the third or upper one vaulted with a subulate point; interior border in two segments, the upper segment or filament in three divisions, the middle one bearing the anther, the lateral ones inclining towards, and forming, with the upper segment of the exterior limb, a veil or covering to it; lower lip larger, ovate, intire, with a yellow tinge along the middle; anther two-lobed, each lobe terminating in a short hornlet or spur; style filiform, supported by two blunt germinal processes; stigma, a compressed cup; germen inferior, hairy, three-celled; capsule oval, three-celled; seeds numerous, arilled.

OBSERVATIONS.

We are informed, by Dr. Roxburgh, *(Flora Indica,* vol. i. p. *23,)* that this beautiful species is "a native not only of Bengal, and common in gardens about Calcutta, but is also a native of China, and various other parts of Asia and the Asiatic Islands. Flowering time the hot season. It is not uncommon to find the beautiful large, rosy-tufted spikes, rising from the earth before a single leaf is to be seen."

This plant was first figured, named, and ascertained by Mr. Salisbury, in his Paradisus Londinensis, published in 1807, (vol. ii. p. 96,) where the true *Zedoaria* of Father Kamel was also described; notwithstanding which, Dr. Roxburgh thought proper to transfer the name of *Zedoaria* to the plant here figured, and to give to the true *Zedoaria* the name of *Zerumbet*, (vide *Asiat. Res.* vol. xi. p. 332. *Flor. Ind.* vol. i. p. 23,) by which name the latter has also been figured and published in Plants of Coromandel, (fig. 201.) This is the more remarkable, as Dr. Roxburgh informs us, that "he gave some of the sliced and dried bulbous and palmate tuberous roots of the last-mentioned plant, (his *Zerumbet,)* to Sir Joseph Banks, which he gave to Dr. Comb, who found that it was the real *Zedoaria* of our *Materia Medica;* and by the same means ascertained that the root of Dr. Roxburgh's *Curcuma Zedoaria*, (the plant here figured,) is the *Zedoaria rotunda* of the shops;" which has, however, with more probability been considered as the root of the *Kæmpferia rotunda.* See Dr. Woodville's Medical Botany, vol. ii. p. 361. also Dr. Fleming's Catalogue of Indian Medicinal Plants and Drugs, in Asiat. Researches, vol. xi. p. 165, where we are informed, that "from the roots of several species of the Curcuma that are found in Bengal, the natives prepare a farinaceous powder, which they call *Tikhur.* It is in every respect similar to the powder prepared from the root of the *Maranta Arundinacea*, or Arrow-root, and is often sold for it in the Calcutta shops."

REFERENCES.

1. Calyx and corolla, shewing the outer and inner limb.
2. Corolla, with the lip depressed, to shew the filament, anther, style, and stigma.
3. Reverse view, the filament seen on the back.
4. The corolla opened by dividing the lip, shewing the germen, with its processes, style, and anther.
5. Calyx.

Curcuma elata.

CURCUMA ELATA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, the middle segment antheriferous; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike lateral; plant intirely green; leaves broad-ovate, sessile, downy underneath; exterior limb of corolla white; lip ovate, bifid, yellow towards the apex; coma large, dark purple.

SYN.—Curcuma elata. *Roxb. Flor. Ind.* i. 25.

DESCRIPTION.

Bulbs and palmate tubers very large, the latter yellow within; pendulous tubers ovate, of a pearly white within; stems 6–8 feet high; leaves appearing when the plant is in flower, broad-ovate, sessile, sheathing the stem, from two to three feet in length by one in breadth, downy or villous underneath; spike lateral, rising to the height of a foot; fertile bractes very large, imbricate, dark-green; barren bractes or coma white at the base, but deep purple above; inner bracte white, membranaceous, unequally bifid at the apex; calyx white, in three obtuse segments; corolla scarcely longer than the bractes; outer limb in three segments, white, with a slight tinge of pink; lip ovate, slightly elongated, and bifid at the apex, which is yellow; filament or upper lip of the interior limb of corolla in three segments, the middle segment bearing the anther, the lateral ones elliptic, converging towards the middle, white; anther double, bicalcarate at the base; style filiform, supported at the base by two long, slender, diverging germinal processes; stigma a ciliated cup; germen ovate, villous.

OBSERVATIONS.

One of the largest species of the genus, a native of *Burma*, introduced by Dr. William Carey, into the Botanic Garden at Calcutta, and sent from thence to Liverpool, where it has repeatedly flowered. Although very large, the palmate tubers possess a slighter *aroma* than most of the other species. I cannot agree with Dr. Roxburgh, that its external appearance resembles *C. Zedoaria*, the leaves of which are purple-clouded, and which scarcely attains to half its height.

REFERENCES.

1. Root.
2. Calyx.
3. Inner bracte.
4. Intire flower.
5. Flower divested of the lip, shewing the anther, style and stigma in front.
6. The same seen at the back.
7. Germen and processes, style and stigma.
8. Style and anther.
9. Lip separated from the flower.

Curcuma ferruginea

CURCUMA FERRUGINEA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, the central segment antheriferous; capsule three-celled; seeds numerous.

SPEC. CHAR.—Spike lateral; stem and leaves purple-clouded; petioles green; leaves broad-lanceolate, equilateral, slightly clouded in the middle of the upper surface of the leaf; outward limb of the corolla red.

Curcuma ferruginea. *Roxb. Flora Indica,* No. 7. vol i. p. 27.

DESCRIPTION.

Bulb large, ovate, with numerous pendulous tubers; stem or sheathing a deep ferruginous red; leaves broad-lanceolate, equilateral, green, except a slight purple cloud on each side the mid-rib on the upper side, and towards the middle of the leaf only; petioles from 6–8 inches long, green and channelled; spike six inches long, scape and bractes deep ferruginous red; fertile bractes greenish, tinged with red; coma a bright pink, or purple; calyx in three segments, acute; corolla longer than the bractes, large; outer limb in three segments, dark red, the two lateral segments equal, lanceolate, concave, converging, the central one rather larger, erect, mucronate, and villous at the apex, forming a hood over the anther and style; lip pentagonoid, bifid at the apex, yellow, with a deeper mark in the centre; filament trilobate, the central lobe bearing the anther, the lateral ones erect, elliptic, converging towards it, yellow; anther double, bicalcarate at the base; style slender, tubular, erect; stigma a ciliated, compressed cup; germen oblong-ovate, villous.

OBSERVATIONS.

The plant from which the present drawing was made, was presented by the late Lady Amelia Hume, to the Liverpool Botanic Garden, in 1807, and has since frequently flowered there. In all its characters it agrees with the *C. ferruginea* of *Flor. Ind.* No. 7. vol. i. p. 27, which we are there informed is a native of *Bengal.* The size of its flowers, and the purple colour of its stem and leaves, render it one of the most conspicuous of the *genus.*

REFERENCES.

1. Root.
2. Intire flower, exterior border erect.
3. Do. exterior border reflexed.
4. Do. deprived of the lip, to shew the bicalcarate anther, style, and stigma.
5. The lip, separated.

Curcuma æruginosa L.

CURCUMA ÆRUGINOSA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, middle segment bearing the anther.

SPEC. CHAR.—Spike lateral; leaves broad lanceolate, with a purple cloud in the middle of the upper surface, not extending to the extremities; exterior limb of the corolla bright crimson; interior limb yellow; interior of the palmate bulbs an æruginous green colour.

SYN.—Curcuma æruginosa. *Roxb. As. Res.* vol. xi. p. *335*. *Flor. Ind.* vol. i. p. *27*.

DESCRIPTION.

Flowering bulb ovate, with imbricated scales; palmate tubers numerous, large, æruginous within; pendulous tubers pearl colour within; leaves broad-lanceolate, smooth on both sides, from 2 to 3 feet long, with sheathing petioles; spike lateral, from 8 to 12 inches in height, crowned with a bright rose-coloured coma; fertile bractes large, imbricate, dark green; calyx white, three-toothed, tipt with purple; corolla scarcely longer than the bractes, tube short, outer limb in three segments, crimson, upper segment fornicate, mucronate; upper lip of the interior limb, or filament, in three sections, yellow, the lateral ones erect, converging, the middle one bearing the anther, which is double, and bicalcarate at the base; lower lip obtusely three-lobed at the apex, yellow; style filiform, supported at the base by two subulate diverging processes; germen villous; capsule three-celled; seeds numerous.

OBSERVATIONS.

This very stately species was introduced from Burma by the Rev. Dr. Carey, into Bengal, where it blossoms in May, immediately after which the leaves begin to appear. *Roxb.* It is distinguished from all the other species of Curcuma by the internal verdigrease-like colour of its palmate tubers. From its late introduction, its peculiar qualities have not yet been ascertained.

The plant from which the present drawing was made, was sent by Dr. Carey to the Botanic Garden in Liverpool, where it rose to the height of six feet, and produced two fine spikes of flowers, in the month of April 1824.

REFERENCES.

1. One of the pendulous roots.
2. Calyx.
3. Lower lip of interior limb of corolla.
4. Exterior limb of corolla.
5. The same expanded.
6. Interior limb seen in front.
7. The same seen at the back.
8. Germen, with its processes, style and stigma.
9. The same, showing the position of the style and anther.

Curcuma rubescens

CURCUMA RUBESCENS.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, the middle segment antheriferous; capsule three-celled, seeds numerous.

SPEC. CHAR.—Spike lateral; stem and petioles purple-clouded; leaves lanceolate; mid-rib clouded on the under side only; exterior limb of corolla red.

SYN.—Curcuma rubescens. *Roxb. Flora. Ind.* No. 8. vol. i. p. 28.

DESCRIPTION.

Bulbs conical, palmate tubers inwardly pearl-coloured, aromatic, bitter; pendulous tubers long, fusiform, insipid; stems formed by the sheathing of the leaves, dark red; petioles long, channelled, red; leaves lanceolate, inæquilateral, mid-rib purple-clouded on the under side only; the whole plant 4–5 feet high; a tinge of red is diffused through the upper surface of the leaves; spike lateral, 5–6 inches long; scape and bractes tinged with a ferruginous red; coma inclining to pink; bractes each containing three or four flowers; calyx short, three-toothed, pink-colour, slightly villous; outer limb of the corolla in three segments, deep red or purple, the lateral ones equal, lanceolate, ovate, the middle or upper rather larger, vaulted, somewhat mucronate, extending over the style and stigma; interior limb formed by the upper lip or filament, in three sections, the central segment bearing the anther, the lateral ones converging over it, pale yellow; lower lip broad, ovate, yellow, with two deeper streaks; anther two-lobed, each lobe terminating at the base, in a long subulated spur, somewhat incurved; stigma slender, supported at the base by two erect, simple, glandular processes, embraced by the anther, and terminating in a cup-shaped stigma.

OBSERVATIONS.

A splendid, although not a lofty species, easily distinguished from every other by the peculiarity of its colours, and yielding in its long pendulous tubers the fine farinaceous substance resembling arrow-root. "In *Travancore*," says Dr. Roxburgh, "where some of the species abound, this flour, or starch, forms, I am told, a large part of the diet of the inhabitants." *Flor. Ind.* vol. i. p. 29. The plant from which the drawing of the present figure was taken, is a native of Bengal, and was sent by Dr. William Carey to the Botanic Garden in Liverpool, where it flowered for the first time in England.

Dr. Roxburgh, in his Description of Monandrian Plants, in *Asiat. Trans.* vol. xi. p. 318, mentions a singular fact not inserted in his *Flor. Ind.* viz. that this plant "blossoms in *May*, and sometimes from the centre of its leaves, in *September;*" a circumstance which demonstrates that a lateral or central inflorescence forms no certain specific distinction, although it may, in conjunction with other diversities, be employed for that purpose. This however is, as far as I know, the only recorded fact of the same species of Scitaminean Plant having flowered both from the root and from the centre of the leaves.

Nor can we at present admit, that this compatability of a lateral and central inflorescence, will bear us out in concluding, that the case may be the same in a radical and *terminal* inflorescence, as observable in the species of Alpinia, Zingiber and Costus, in some of which the inflorescence has its peculiar scape, and in others is terminal at the summits of the branches; at least they cannot be accounted for on the same

grounds, as in the latter case the stems and leaves must rise prior to the flower; besides which it must be added, that in the former case the diversity consists merely in a change of position, that which is at some times solitary, at others sheathing itself in the centre of the leaves; whilst the latter seems to require an essential change of conformation; to admit of which we must suppose the scape to be only a compressed or imperfect stem, which if it had expanded, would have formed a perfect foliated branch, bearing the inflorescence at its summit; but this would be extending our conjectures too far, and we must wait till more decisive facts enable us to make up our minds on this very curious subject.

REFERENCES.

1. Calyx.

2. Complete flower, cut open and expanded to shew the exterior and interior limb of the corolla, the anther with its spurs, the style with its supporting processes and stigma, and the germen.

Curcuma latifolia

CURCUMA LATIFOLIA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, the central segment bearing the anther; lip ovate; capsule three-celled.

SPEC. CHAR.—Spike lateral; stem and petioles green; leaves broad-lanceolate, equilateral, pubescent beneath, a purple cloud down the middle on the upper surface, which frequently appears also on the under side; outer limb of the corolla a pale, greenish yellow, or straw-colour; lip yellow, with two or three brown lines down the centre; coma pale crimson or pink.

DESCRIPTION.

Flowering bulb large, ovate; palmate tubers very few, pale yellow within; pendulous tubers somewhat pear-shaped, and connected to the bulb by strong fibrous cords; stem and petioles green; leaves broad-lanceolate, strongly nerved, 3–4 feet long, by 12–15 inches broad, smooth on the upper surface, sericeous or pubescent beneath, with a strong purple cloud the whole length of the leaf, reflected through to the under side; petioles long and channeled, sheathing the stem at their base; the whole plant from 8 to 12 feet high; spike radical, rising up before the leaves; inflorescence 6–8 inches long; outer bractes broad, ovate, pointed, striated, green, attached to the rachis in such a manner as to form a small cistern, or cup, which is generally filled with pure water by distillation from the plant, and is probably essential to the growth of the flowers, which spring from the base of those reservoirs; inner bractes ovate, smooth, membranaceous, one to each flower; from 3 to 4 flowers in each fascicle; coma large, bright pink or crimson; corolla ringent; calyx tubular, inflated, three-toothed, embracing the tube of the corolla half its length, scattered with fine hairs; outer limb in three segments, two lateral segments equal, ovate, lanceolate, the upper or middle one rather longer, mucronate, vaulted over the organs of fructification, a small tuft of white hairs at the apex; inner limb or lip broad, ovate, slightly lobed, reflected, yellow, with a few brown lines down the centre; filament forming the upper lip, in three segments, the central one antheriferous, the lateral ones or wings petal-like, erect, converging; anther short, compressed, two-lobed, bicalcarate, embracing the style; germen ovate, hairy, three-celled; style slender, tubular, supported by the germinal processes; stigma cup-shaped, extending a little beyond the anther.

OBSERVATIONS.

This most stately species of Curcuma, now for the first time published, and to which we have given the name of *latifolia*, does not appear to be described among the *seventeen* species enumerated in the Flora Indica, nor in any other work with which we are acquainted. It was introduced into the Botanic Garden at Liverpool, under the name of *C. comosa;* but differs so materially from that species in many important particulars, that it is impossible to reconcile them. Of these it may be sufficient to state, that in *C. comosa* the leaves are "*smooth and green in every part*, except in those that appear first in the season, which have a faint ferruginous cloud on the *centre* of the upper surface beyond the middle," (*Flor. Ind.* vol. i. p. 30,) but in the *latifolia* the leaves are sericeous beneath, and are marked the whole length of the leaf down the middle, with a deep purple cloud which extends through to the under side of the leaf. In the *comosa* the fertile bractes are described as of "a beautiful pale pink, and the upper ones of a deep lively rosy red;" but in the *latifolia* the lower or fertile bractes are green, and the upper ones a pink colour. A still stronger distinction occurs in the exterior border of the corolla, which in the *comosa* is red, but in the *latifolia* is a pale yellow or straw colour. In order to give their due weight to these remarks,

it may be proper to observe, that the diversities of colour seem to be more permanent, and of greater importance in this genus, than in any other of the Scitaminean tribe, and to be indispensible in the discrimination of the numerous species, in the configuration of which so little variety is to be found; an observation which leads us further to remark on the impropriety of confining our investigation of plants to any particular system or rule, and the necessity of availing ourselves of every advantage with which the variety of nature has supplied us.

Nearly the same discrepancies that subsist between the *latifolia* and *comosa*, prevent us also from considering the former as the same with the *C. elata* of the *Flor. Ind.* vol. i. p. 25. the leaves of which are described as "sessile on their sheaths, and the whole of an uniform green;" whilst those of the *latifolia* have long grooved petioles, and are clouded on both sides, as before mentioned. It may also be observed, that the *latifolia* grows, even in this country, to a larger size than either the *comosa* or *elata* are said to grow in India; the former of which is "from 5 to 6 feet," and the latter "6 feet high;" whilst our plant rises from 8 to 12 feet high.

This plant was sent by Dr. Carey from Serampore, to the Botanic Garden at Liverpool, where it flowered in May 1820, and where it still continues, by its rapid annual growth and magnificent foliage, to afford a fine specimen of East Indian vegetation.

REFERENCES.

1. Inner bracte.
2. Calyx.
3. Intire flower.
4. Corolla open, and seen in front, showing the filament and anther, style and stigma, with the germen and its processes.
5. The same seen at the back.
6. Lip.

Curcuma Zedoaria

CURCUMA ZEDOARIA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

Gen. Char.—Anther double, embracing the style, bicalcarate at the base; filament petal-like, in three segments, the central segment bearing the anther; capsule three-celled; seeds numerous.

Spec. Char.—Spike lateral; stem and petioles green; leaves linear-lanceolate, inæquilateral, smooth on both sides, a purple cloud down the middle on the upper surface, a fainter cloud on each side the mid-rib below; outer limb of the corolla straw-colour; lip ovate, emarginate, yellow towards the apex.

Syn.—Rheede *Hort. Mal.* v. xi. p. 17. *tab.* 7. *Kua.*

Rumph. *Amb.* v. 5. *tab.* 68.

Amomum Zerumbet. *König. in Retz. Obs. 3, 55.*

Curcuma Zerumbet. *Roxb. in Asiat. Res.* v. xi. *333, and Flor. Ind.* 1, 20.

Curcuma Zerumbet. *Pl. Corom. No.* 201.

Curcuma Zedoaria. *Bot. Mag. No.* 1546.

DESCRIPTION.

Bulb conical, striated; palmate tubers thick, fleshy, pale-yellow within; radical tubers suspended by strong fibres, ovate or pear-shaped, white within, farinaceous, almost inodorous; stem rising from the radical bulb, intirely green, but paler towards the root; plant four feet high; leaves linear-lanceolate, 1–2 feet long, intire, smooth on both sides, clouded with a purple streak down the middle on the upper surface, and a fainter streak on each side the mid-rib below; inflorescence radical, rising distinct from, and generally before the leaves; spike formed by a succession of broad ovate imbricated bractes, pale green tinged with red in the margin, each bearing several flowers which open in succession; the upper bractes sterile, white, or pale straw colour, terminating in bright pink, and forming the *coma* of the plant; calyx superior, about one-third the length of the corolla, membranous, irregularly three-toothed; corolla with a double border; outer limb in three pale straw-coloured segments, the middle segment the largest, mucronate, hooded over the anther, the two lower segments equal, lanceolate, intire; inner limb in two divisions, the upper division or filament in three sections, the central one bearing the anther, the lateral ones converging and protecting it; lower division, or lip, broad-ovate, yellow, and slightly bifid at the apex; anther spurred, embracing the style, which rises between the germinal processes, and extends a little beyond the anther, terminating in a compressed, ciliated, cup-like stigma; germen downy, three-celled.

OBSERVATIONS.

The species of Curcuma, as far as they were then known in England, have been well distinguished by Mr. Salisbury, in his *Paradisus Londinensis*, published in 1807. These were, 1. *C. Longa*, figured in Jacquin, *Hortus Vindobonensis.* 2. The true Zedoary, accurately distinguished by Father Kamel, the leaves of which are smooth, with a large purple cloud on their upper surface. 3. A plant with smooth leaves, the petioles of which only are dark purple *(Curcuma Rubescens.)* And, 4. The plant (figured by Salisbury,) with leaves intirely green, and downy beneath, and which he named *Aromatica.* By a singular transposition, Dr. Roxburgh has, however, in his *Description of Monandrous Plants*, published in Asiat. Researches (vide vol. xi. 332,) given the name of *Zedoaria* to

the last-mentioned species, the *Aromatica* of Salisbury; and this has been repeated in Flora Indica, (vol. i. p. 23;) at the same time he has described the true *Zedoary*, (the plant here figured,) under the name of *Curcuma Zerumbet*, by which name it is also figured and described in the *Plants of the Coast of Coromandel*, fig. 201.

That some degree of doubt had existed respecting Dr. Roxburgh's *Curcuma Zedoaria*, (the *Aromatica* of Salisbury,) appears from Mr. Colebrooke's comment upon it in *Asiat. Researches*, (vol. xi. p. 333,) where he says, "The *Malabar* and *Malay* names are given by Van Rheede and Rumphius for *Zedoary;* and their descriptions are cited by Willdenow for this plant, *but appear to suit better with the next species of Curcuma*," (the true *Zedoaria* here figured, or *Zerumbet* of Roxburgh,) to which he adds, "If the drug be not the true Zedoary, the *synonime* must be transferred *to some other plant.*" From what is here stated, it will appear that the doubts of Mr. Colebrooke were well founded.

In the first place we must remark, that the name of *Zerumbet*, as applied to a Curcuma, has no existence, but as a synonime for *Zedoaria*, the *Amomum Zerumbet* of Linnæus and Willdenow being a *Zingiber;* and that if it were to be adopted, the appellation of *Zedoaria* must be abolished altogether. Dr. Roxburgh has, however, not only given to the plant which produces the real drug called *Zedoary*, the name of another plant, but has transferred the name of *Zedoaria* to a plant which does not produce the drug—that is, from the plant described by Father Kamel, *the leaves of which are smooth, with a large purple cloud on the surface*, to a plant which is *intirely green, with the leaves pubescent beneath;* and this is the more extraordinary, as in the description in Coromandel Plants, No. 201, it is stated, that "the dried root of the plant there given as *C. Zerumbet*, agrees *tolerably well* with that called *Zedoaria longa* in Europe, but *not* with the drug there called *Zerumbet.*"

Both these plants having now flowered in the Botanic Garden at Liverpool, we are enabled to clear up the difficulty; which we propose to do, by excluding the specific name of *Zerumbet*, as applied to a *Curcuma*, (except as a synonime of some authors for *Zedoaria,)* and restoring the name of *Aromatica* to the plant of Salisbury, under which name it is accordingly figured in the present work.

Dr. Woodville, in his Medical Botany, (vol. ii. p. 362,) informs us, that "the roots of Zedoaria *longa* and *rotunda*, are both produced by the same species of plant, and are indiscriminately used in the shops," and that "on the authority of Linnæus, the Colleges of London and Edinburgh have referred the officinal Zedoary to *Kæmpferia rotunda*," to which plant it is ascribed in Dr. Woodville's work. How far the disuse into which this once favourite medicine has fallen, may be attributed to this mistake is uncertain; but that these plants are generically different, and that the true Zedoaria longa is the root of the plant here figured, are facts now ascertained; although it is not unlikely that the Zedoaria rotunda is produced by a Kæmpferia.

REFERENCES.

1. Calyx and corolla, the outer limb depressed.
2. Calyx and corolla, the outer limb erect.
3. Calyx and corolla without the lip, shewing the broad three-lobed filament, calcarate anther, style and stigma.
4. The lip detached from the corolla.

Gibba Careyana?

GLOBBA CAREYANA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament long, flexile, with a membranous appendage at the apex.

SPEC. CHAR.—Inflorescence terminal; flowers in fascicles; leaves ovate-lanceolate; anther broad-ovate, slightly projected or winged at the margin; lip bifid at both ends.

Globba Careyana, *Roxb. Flor. Ind.* No. 6, p. 77.

Globba Careyana, *Loddiges' Bot. Cab.* No. 691.

DESCRIPTION.

Root tuberous, spreading, fusiform; stems numerous, about two feet high, invested in the sheathing of the leaves, which are spotted with red; leaves sessile, alternate, bifarious, broad-lanceolate, finely acuminate, smooth on the upper surface, but villous underneath; racemes terminal, erect, composed of alternate fascicles of about three flowers each, on short pedicels, the lowest of them producing a viviparous bulb, as is usual in the genus; general bractes one to each fascicle, with a smaller coloured one to each flower; calyx superior, campanulate, trifid, slightly hairy at the apex; corolla tubular, slightly villous; exterior limb in three nearly equal, ovate, segments, the two lateral ones reflexed, the central one incurved, and somewhat hooded; the interior limb of three unequal segments, the two lateral ones longer than the exterior limb, declined, but recurved at the apex; lip spatulate, bifid at both ends, and elevated on the filament above the other five segments of the corolla; the whole flower of a deep orange colour; filament very long, grooved, incurved; anther broad-ovate, cordate, with a marginal appendice extending a little beyond it, but without any other distinguishing character; style filiform, embraced by the groove of the filament, but occasionally taking a nearer course, like a suspended thread; stigma funnel-shaped, ciliated; germen round, rugose, three-celled; seeds many.

OBSERVATIONS.

Dr. Wallich remarks, that "the *Globba racemosa* of Sir J. E. Smith, *Exot. Bot.* tab. 117, seems to come very near to this species, and to *G. orixensis*," *Flor. Ind.* vol. i. p. 78, in note. "From *Pegue* this pretty little plant was introduced by Mr. F. Carey, into the Botanic Garden at Calcutta, where it flowers in August." *Roxb. Flor. Ind.* vol. i. p. 77.

Living plants have been received at the Liverpool Botanic Garden, from both Dr. Wallich at Calcutta, and Dr. Carey at Serampore; from one of which the present figure was taken in August 1822.

REFERENCES.

1. Intire flower.
2. Germen and processes, style and stigma.
3. Anther, and part of filament.
4. Bracte.

Globba Marantina L.

GLOBBA MARANTINA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament long, flexile, with a membranous appendage at the apex.

SPEC. CHAR.—Inflorescence terminal; spike imbricate; appendage of the filament bilunate, or 4-lobed; leaves broad-lanceolate, inæquilateral; bractes frequently producing viviparous bulbs.

SYN.—Globba marantina. *Lin. Mant.* ii. 170. *Willd.* i. 153.
Colebrookia bulbifera. *Roxb. Don. Cat. Hort. Cant.*
Globba marantina. *Smith, Exot. Bot.* p. 85. fig. 103.

DESCRIPTION.

Roots tuberous, fusiform, spreading, stem 1–2 feet high; leaves alternate, broad-lanceolate-acute, sessile, smooth above and downy beneath; spike terminal, erect; outer bractes alternate, laxly imbricated, one-flowered, broad-ovate, acute, ribbed, downy; inner bracte small, membranous, acute; flowers erect; calyx tubular, three-cleft at the apex, yellow; corolla tubular, very long, with a double border or limb; outer limb in three equal acute lobes; interior limb of three unequal segments, two of them nearly resembling those of the outer limb; the third, or lip, larger than the rest, vertical, slightly cloven at the apex, and expanding below into two broad lobes; the whole flower of a bright orange colour, flaccid, and remaining only a few hours; filament very long, linear, grooved, embracing the style, which frequently escapes, and hangs in a loose thread; anther placed at the extremity of the filament, supported on an appendage resembling two crescents attached to each other at the back, and terminating in four acute points; style tubular, filiform, projecting a little beyond the anther; stigma a small ciliated cup.

OBSERVATIONS.

The name of *Globba*, adopted from Rumphius, has been indiscriminately applied to several plants of the Scitaminean tribe. Even Linnæus himself, whilst he adopted the name, and had undoubtedly seen the present species, mistook its character, and placed it in his class of *Diandria*. For the elucidation of this subject, we are indebted to Sir J. E. Smith, whose correction of this genus, which has perplexed several eminent botanists, is thus referred to by Dr. Roxburgh. "It is to Dr. Smith, who found the original specimen of *Globba Marantina* in the Linnæan Herbarium, that we are obliged for detecting and correcting this error, in his description of the plant in his *Exotic Botany*. The same plant I had, till this discovery was made known, considered to belong to an undescribed genus, which I called *Colebrookia*, in honour of our President, whose knowledge of botany, and the benefit the science has derived from his help, justly entitle him to this distinction, which by all true botanists is considered the highest reward, and more lasting than even a monument of marble or brass; and I also take this opportunity of thanking Dr. Smith for having (in consequence of his discovering that my *Colebrookia bulbifera* was *Globba marantina* of Linnæus) transferred that name to another genus of East Indian plants." *Roxb. Descrip. of Monandrous Plants, in As. Res.* xi. 357.

In consequence of these elucidations, the *Hura Siamensium* of Koenig, *Retz. Obs. fas. 3.* 40, a plant which has long employed the conjectures of botanical students, is found to be a species of this genus, nearly allied to Globba marantina; and the whole species of Globba are as accurately defined as any in the whole vegetable system.

REFERENCES.

1. Intire flower, showing the germen, calyx, corolla, filament, anther and stigma.
2. A viviparous bulb, frequently produced instead of a flower.
3. Germen, with its processes, style and stigma.
4. Filament detached, with its terminal appendages.
5. Calyx.
6. Inner bracte.
7. Outer bracte.

Globba saltatoria.

GLOBBA SALTATORIA.

MONANDRIA MONOGYNIA.

SECT. II. SCITAMINEÆ.

GEN. CHAR.—Anther double, embracing the style; filament long, flexile, with an appendice at the apex.

SPEC. CHAR.—Inflorescence radical; filament very long, slender; an appendice of two square-shaped lateral processes, one on each side the anther, and two long filiform appendices, or wings, near the base.

SYN.—Globba radicalis. Roxb. Pl. Cor.

Globba subulata. Roxb. Fl. Ind. vol i. p. 78.

Globba purpurea. Andr. Bot. Rep. 615.

Mantisia saltatoria, Opera-girls. Curt. Bot. Mag. 1320.

DESCRIPTION.

Root perennial, composed of numerous diverging fleshy fibres; stems annual, slender, two feet in height; leaves alternate, bifarious, sessile, narrow, linear, from six to nine inches long; villous on both sides, terminating in a withered filiform point; scape radical, panicle erect, about a foot high; flowers alternate, sessile; bractes solitary, large, ovate, purple; calyx superior, three-toothed, permanent; corolla tubular, long, slender; upper lip in three sections, one erect, the two others reflexed; lower lip much larger than the divisions of the border, deeply bifid, flaccid; filament very long and slender, finely grooved for the reception of the style, furnished near the base with two long subulate appendices, or wings; anther double, embracing the style, and expanding at the sides with two square-shaped lobes, or wings, which alone sufficiently mark this species; style long, very slender, frequently escaping from the grooved filament, and giving additional lightness to the singular appearance of the flower; capsule globular, purple, size of a small cherry, six-ridged, one-celled, opening in three valves, spontaneously from the apex; seeds numerous, small, oblong, villous. The whole of the scape and flower, including the bractes, are of a beautiful light purple, or violet colour, excepting only the lip, which is of a bright yellow.

OBSERVATIONS.

"Found wild in the forests of Chittagong, by Mr. W. ROXBURGH, and by him introduced into the Botanic Garden at Calcutta in 1801, where it blossoms in April, May, and June. There is a constant succession of flowers from the lengthening branches of the panicle, for nearly two months, which renders this lovely plant one of the most charming of the whole natural order that I have yet met with."—*Roxburgh, Flor. Ind.* vol. i. p. 78.

It flowers in our stoves about the same period. In a few remarks on Dr. Roxburgh's description of the Monandrous Plants of India, published in the Linnæan Transactions, (vol. xi. p. 270,) I had expressed my assent to the separation of this plant from the genus GLOBBA, and to its constituting a new genus under the name of MANTISIA, as proposed by Dr. Sims, (in Bot. Mag. No. 1320,) chiefly on the ground there stated, of its radical inflorescence. Subsequent experience has, however, decidedly shown, by repeated instances, that the distinction between a radical and terminal inflorescence in Scitaminean plants, is merely specific, and must not be considered, in any degree, as contributing to ascertain the genus, which must depend on the parts of fructification only. We are now acquainted with *Alpinias* that flower immediately from the root, and *Zingibers* from the extremity of the stem; which are yet so clearly ascertained with respect to their genera, as to leave no doubt on the subject. In like manner we find the Globba in both its radical and terminal species; but cannot, on that account, consider them as different genera.

The name of *Mantisia* was given to this plant, from its being supposed to bear some resemblance to the insect called MANTIS—that of *Saltatoria* from a fancied likeness to opera girls dancing. To avoid more alteration than necessary, the latter has been retained, in preference to the proposed name of *Radicalis*, which, in consequence of the discovery of other radical species, would now lose its distinctive character.

The *Globba Spathulata* of Roxb. (*Flor. Indica*, vol. i. p. 80,) flowers also with a radical panicle.

REFERENCES.

1. Corolla and filament, with the anther and appendices.
2. Ditto seen at the back, with the germen and processes.
3. Floral bracte.
4. Calyx.